

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION



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Phone: 860-594-3128

June 25, 2015

Subject: Project No. 73-182

F.A.P. No. 0008(127)

Rehabilitation of Bridge No. 00608 on Route 8 NB over the Naugatuck River and Naugatuck Railroad.

NOTICE TO CONTRACTORS:

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project is still scheduled for July 1, 2015 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

Addendum No. 1 is attached and can also be obtained on the Statewide Contracting Portal at http://www.biznet.ct.gov/scp_search/BidResults.aspx?groupid=64

This addendum is necessary to add new special provisions, revise special provisions, add new contract items, revise plan sheets and add permit registration forms.

Bid Proposal Forms (0073-0182.EBS file and amendment file 0073-0182.00# if applicable) are available for those bidders that have received approval from the Department to bid on the subject project.

Pre-Bid Questions and Answers: Questions pertaining to DOT advertised construction projects must be presented through the CTDOT Pre-Bid Q and A Website. The Department cannot guarantee that all questions will be answered prior to the bid date. **PLEASE NOTE - at 12:01 am, the day before the bid, the subject project(s) being bid will be removed from the Q and A Website, Projects Advertised Section, at which time questions can no longer be submitted through the Q and A Website. At this time, the Q and A for those projects will be considered final, unless otherwise stated and/or the bid is postponed to a future date and time to allow for further questions and answers to be posted.**

H. J. Emond

For: Gregory D. Straka

Contracts Manager

Division of Contracts Administration

JUNE 24, 2015
REHABILITATION OF BRIDGE NO. 00608 ON ROUTE 8 NORTHBOUND OVER
NAUGATUCK RIVER & NAUGATUCK RAILROAD
FEDERAL AID PROJECT NO. 0008(127)
STATE PROJECT NO. 73-182

TOWNS OF LITCHFIELD AND HARWINTON

ADDENDUM NO. 1

This Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer Nos. 4, 6, 7, 8, 10, 13, 14, 15, & 16

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the Contract:

- ITEM NO. 0601323A – MODIFY CONCRETE BEARING PAD
- ITEM NO. 0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL
- ITEM NO. 0603768A – STRUCTURAL STEEL

REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- ITEM NO. 0503947A – JACKING EXISTING BEAMS
- ITEM NO. 0503949A – DISCONNECT AND RECONNECT EXISTING DIAPHRAGMS
- ITEM NO. 0503968A – DISCONNECT AND RECONNECT EXISTING CROSS FRAMES
- ITEM NO. 0521003A – BEARING REPLACEMENT WITH ELASTOMERIC BEARING PADS
- ITEM NO. 0601073A – CLASS “S” CONCRETE
- ITEM NO. 0603031A – SPLICING STEEL GIRDERS (SITE NO. 1)
- ITEM NO. 0603061A – STRUCTURAL STEEL (SITE NO. 1)
- ITEM NO. 0603870A – REMOVAL OF EXISTING STRUCTURAL STEEL

CONTRACT ITEMS**NEW CONTRACT ITEMS**

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
0601323A	MODIFY CONCRETE BEARING PAD	EA.	20
0603729A	LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL	S.F.	2,200
0603768A	STRUCTURAL STEEL	LB	12,000

PLANS**REVISED PLANS**

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:
04.02.A1, 04.13.A1, 04.14.A1, 04.15.A1, 04.16.A1, 04.41.A1, 04.44.A1, and 04.45.A1

PERMIT

The General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities is hereby added to the contract.

The Detailed Estimate Sheet does not reflect these changes.

The Bid Proposal Form has been revised to reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

ITEM #0601323A- MODIFY CONCRETE BEARING PAD

Description: Work under this item shall consist of the modification of existing concrete bearing pads to accommodate the revised bearing heights of new expansion and/or fixed bearings. Included under this item shall be sawcutting of concrete, concrete removal, cutting of existing anchor bolts, and roughening of the existing concrete as well as the furnishing of concrete, formwork, and placement of concrete. Also included is the furnishing to the Engineer of field measurements as defined in this specification. The Contractor shall perform work as indicated on the plans, in accordance with these specifications, and as directed by the Engineer.

Any drilling and grouting of anchor bolts shall also be included, where called for on the plans.

Materials: The materials shall conform to the following requirements:

1. The chemical adhesive anchor material shall be a resin compound specially formulated to anchor steel bars in holes drilled into concrete for the purpose of resisting tension pull-out. The chemical anchor material shall conform to Subarticle M.03.01-15 of the Standard Specifications and be selected from the Department's Qualified Products List.
2. Concrete shall be a Contractor design mix which achieves a minimum 28 day strength of 4000 psi.
3. The Contractor shall submit to the Engineer a concrete mix design for approval. The Contractor shall further provide a certificate stating that the mix submitted shall meet the requirements.
4. Coarse aggregate shall consist of broken stone, having a maximum size of 3/8 inch, conforming to the requirements of Article M.03.01.
5. Fine aggregate, Water, Air-Entraining Admixture and Retarder Admixture shall conform to the requirements of Article M.03.01.
6. The air-entraining feature may be obtained by the use of either air-entraining portland cement or an approved air-entraining admixture. The entrained air content shall not be less than 4 % or more than 6 %.
7. Portland Cement shall conform to the requirements of M.03.01, except that Type III or Type IIIA portland cement may be used at no additional cost to the State.
8. The addition to the mix of calcium chloride or an admixture containing calcium chloride will not be permitted.
9. Non-shrink grout shall conform to Article M03.01-12.

10. The anchor rods shall conform to Section M.06.02, except that the material shall be as specified on the contract drawings.

In lieu of a Contractor designed concrete mix, the Contractor may at no additional cost to the State, submit for approval one of the following bagged repair mortars:

Emaco T415 Rapid Strength Repair Mortar

Manufactured by: BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379

Emaco T430 Rapid Strength Repair Mortar

Manufactured by: BASF Building Systems
889 Valley Park Drive
Shakopee, MN 55379

Rapid Set DOT Repair Mortar

Manufactured by: CTS Cement Manufacturing Corporation
11065 Knott Avenue, Suite A
Cypress, CA 90630

Five Star Structural Concrete V/O

Manufactured by: Five Star Products Inc.
750 Commerce Drive
Fairfield, CT 06825

The concrete repair mortar shall be extended with aggregate in accordance with and meeting the requirements of the manufacturer recommendations.

If one of the concrete repair mortars is selected for use, 4" x 8" test cylinders shall be used for testing in conformance with the Standard Specifications.

A Materials Certificate shall be required for the chemical anchor material and cementitious mortar in accordance with Article 1.06.07, certifying the conformance of these materials to the requirements stated herein.

All materials shall be approved by the Engineer before use.

Construction Methods: Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for review in accordance with Article 1.05.02.

These drawings shall include but not be limited to the following:

- a) Material lists.
- b) Material designations.
- c) An “Existing Bearing Assembly and Concrete Pad field measurements” table containing field measurements of the existing bearing assembly height and concrete pad height taken at each location that is to receive a modified concrete bearing pad. Refer to Appendix A of this specification for the table format and minimum data to be provided (see column headings) along with example measurements and calculated proposed pad height.

“Bearing assembly height”, in this case, is defined as the height from the bottom of the beam/girder flange to the top of the existing concrete bearing pad, measured adjacent to the centerline of the bearing assembly.

Additionally, for locations requiring the drilled and grouted installation of anchor bolts:

- d) Location and sizes of all anchor bolts including anchor bolts lengths
- e) Type of drill.
- f) Diameter of bit.
- g) Method of cleaning holes.
- h) Method of placement of the chemical anchor material.

Specifications and recommendations for the aforementioned may be obtained from the manufacturer of the chemical anchor material. The weight of the drill shall not exceed twenty pounds.

The Contractor shall inspect the existing concrete bearing pads before constructing the proposed concrete bearing pads. The Contractor shall remove portions of protruding anchor bolts below the surface of the concrete by carbon arc gouging and fill the holes with non-shrink grout. All other cracks, spalls, or deterioration shall be reported to the Engineer. The Engineer shall be given the opportunity and access to sound the existing concrete bearing pads for deterioration.

Removal of concrete shall conform to the requirements of Section 9.74.03 amended as follows:

Article 9.74.03 – Construction Methods: *Add the following:*

Care shall be taken not to damage the portion of concrete that is to remain in place. Maximum 15.5lb pneumatic hammers or any other method approved by the Engineer shall be used to remove concrete. Care shall also be taken to avoid damaging anchor bolts that are to remain in place – for example, at locations where existing anchor bolts may be cut at a height slightly below the proposed top of a modified concrete pad, for the purpose of providing additional shear resistance for the pad.

The Contractor shall design, furnish, install and remove temporary demolition shields to prevent debris from dropping below as directed by the Engineer. The Contractor shall submit working drawings to the Engineer in accordance with Section 1.05.02. The debris shield shall remain in place during construction until the Engineer determines it is no longer needed. The Contractor is responsible for the integrity and maintenance of the shield during their use. Any repairs to the shield shall be at no cost to the State.

All debris shall be removed from the shields daily and be disposed of, from the site, by the Contractor.

Holes shall be drilled into the concrete at the locations shown on the plans.

Drilling methods shall not cause spalling, cracking, or other damage to the concrete. Those areas damaged by the Contractor shall be repaired by him in a manner suitable to the Engineer and at no expense to the State.

The anchor bolts and chemical anchor material shall be installed in the holes in accordance with the manufacturer's recommendations.

If existing reinforcing bars are encountered during the drilling operation, the hole shall be relocated to clear the existing reinforcing as directed by the Engineer. Uncompleted holes shall be filled with the chemical anchor material and finished smooth to the contour of the surrounding concrete surface. Care shall be taken not to damage exposed reinforcing bars.

Prior to placing the chemical anchoring material in the holes, the holes shall be cleaned of all dirt, moisture, concrete dust and other foreign materials. Fabrication and placement of anchor bolts shall conform to the requirements of Article 6.02.03. The anchor bolts and the chemical anchoring material shall be installed in the holes in accordance with the chemical anchoring material manufacturer's recommendations.

Prior to the removal of any concrete, the Contractor shall make a ½ inch sawcut to delineate the limits of the existing concrete to be removed. The surface on which the concrete bearing pad is to be poured shall be intentionally roughened to a depth of ½ inch and wetted to a saturated surface dry condition just prior to the placement of new concrete. There shall be no standing water on the surface. Mixing, placing, curing, and finishing of the concrete shall be in accordance with Article 6.01.03. If a bagged repair mortar is to be used, the concrete surface preparation, mix, placement and curing shall be done in accordance with the manufacturer's recommendations and in accordance with Article 6.01.03.

Fabrication and placement of anchor bolts shall conform to the requirements of Article 6.02.03.

Method of Measurement: This work will be measured for payment by the number of concrete bearing pads modified, as described above, completed and accepted by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price each for "Modify Concrete Bearing Pad", complete in place, which price shall include the furnishing of field measurements, cutting anchor bolts, non-shrink grout, drilling and grouting anchor bolts, furnishing and placing anchor bolts and concrete or bagged repair mortar, debris shield, the sawcutting, removal, and surface roughening of existing concrete, and all materials, equipment, tools, labor and work incidental thereto.

APPENDIX A
Existing Bearing Assembly and Concrete Pad field measurements
And Proposed Concrete Pad Height

				(field)		(field)		
	Pier/ Abut No.	Beam/ Girder No.	Exp.(E), Fix.(F)	Exist. Assembly Height (A)	New Assembly Height (B)	Existing Conc. Pad (C)	Proposed Conc. Pad Height C-(B-A)	Notes
[example]	"a"	"b"	E	4.25	4.75	2	1.5	
[example]	"c"	"d"	F	3.75	4.75	2	1	

All dimensions are in inches.

ITEM #0603729A - LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

Description: Work under this item shall consist of paint removal and field painting of the existing steel at designated areas. The work shall include containments, paint removal, collection of paint and associated debris, surface preparation and field painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities required the removal of the existing coatings to accomplish other contract work (i.e., arc gouging, welding, etc.). The paint removal is required because of the possible presence of hazardous paint (e.g., containing lead or other hazardous metals). The paint removal is required to comply with OSHA and DEEP (Department of Energy and Environmental Protection) regulations.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP-1 entitled "Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures". When the work involves the disturbance of lead-containing paint, the contractor and subcontractor are also required to be certified to SSPC QP-2 "Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint". The certification(s) must be kept current for the duration of the work. If a contractor's or subcontractor's certification expires, the firm will not be allowed to do any work related to this item until the certification is reissued. Requests for extension of time for delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the effected areas shall be cleaned to SSPC-SP 15 and coatings reapplied in accordance with these specifications at no additional cost to the State.

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the contractor shall submit the following to the Engineer for acceptance:

- A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness, final film continuity, etc.
- A copy of the firm's written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
- A detailed description of the contractor's enforcement procedures and the authority of personnel.
- Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).

- If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. **Note:** If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the **cure** period.
- Proof of SSPC-QP1 qualifications and QP2 qualifications, as applicable.
- Proof that the finish coat complies with the color and gloss retention performance criteria of SSPC Paint 36, Level 3, for accelerated weathering.
- Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin paint removal Work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The paint shall be one of the following two coat systems:

Carbomastic 15	
Carbothane 134 HS, manufactured by:	Carboline 2150 Schuetz Road St. Louis, MO 63146 (800) 848-4645

Epoxy Mastic Aluminum II	
Acrolon 218 HS, manufactured by:	Sherwin Williams 425 Benton Street Stratford, CT 06615 (203) 377-1711 (800) 474-3794

Carbomastic 90	
Carbothane 134 HS, manufactured by:	Carboline 2150 Schuetz Road St. Louis, MO 63146 (800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the

Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Energy and Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

Control of Materials: A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The coating thickness shall be in accordance with the Manufacturer's printed instructions. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.

Note: If any of the above and/or following stipulated contract specifications differ from those of the manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods: All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level I Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning or hand/power tool cleaning)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding equipment to localized areas of existing steel superstructures, the existing paint shall be removed to a width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for

review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include paragraphs A through C:

- A. The containment materials shall be air and water impenetrable and fire resistant.
- B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
- C. All attachments to bridge parapets and/or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris

The above specified containment must be utilized for **all** paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Storage and Disposal of Collected Debris: All of the debris resulting from the paint removal operations shall be contained and collected. Debris within containment enclosures shall be removed by HEPA vacuum collection prior to disassembly of the enclosures. All the debris, rust and paint chips shall be stored in leak proof storage containers at the project site. Debris storage shall be in accordance with Connecticut Hazardous Waste Management Regulations. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all time except during placement, sampling, and disposal of the debris.

Prior to generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer: (1) the transporter's current U.S DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain an EPA ID number that will be forwarded to the contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

The Contractor shall conform to the latest requirements of the Hazardous Waste Management Regulations prepared by the DEEP's Hazardous Waste Management Section, subject to regulations of Section 22a-449(c) of the Connecticut General Statutes.

Disposal of the debris shall be in strict conformance with all Federal E.P.A. and DEEP regulations for hazardous materials.

All necessary forms, including the "Uniform Hazardous Waste Manifest" obtained from the Hazardous Waste Management Section of DEEP, must be filled out, approved and signed by the Department's Project Engineer (Construction), and appropriate copies returned to the Department's Division of Environmental Compliance.

A licensed hazardous waste transporter and a licensed hazardous waste treatment/disposal facility must be secured from lists available from the DEEP and approved by the Department's Division of Environmental Compliance.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of their failure to be in compliance with this special provision and all Federal, State and Local laws.

Paint Removal/Surface Preparation: The existing structural steel shall be power tool cleaned according to SSPC-SP 15 "Commercial Grade Power Tool Cleaning." The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 "Solvent Cleaning." Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 15, painting operations can commence.

Note: Chemical stripping and abrasive blast cleaning will not be permitted.

Existing Steel Surfaces to be Painted: After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 15, the steel surfaces which are to receive the field touch up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer's safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
- Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roll equipment. The containment for paint application shall consist of drop clothes and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not

allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: No solvent cleaning just prior to coating application or coating application work shall be performed when the conditions are as follow:

- When the relative humidity is at or above 80 percent or when there is falling rain or dew present, or anticipated, before a prepared surface can be coated.
- When the substrate is damp or covered by frost or ice.
- When the surface temperature or air temperature are less than 50 degrees Fahrenheit or greater than 100 degrees Fahrenheit.
- When the surface temperatures of the steel or air are less than five (5) degrees Fahrenheit above the dewpoint temperature, as determined by a surface temperature thermometer and electric or sling psychrometer.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.

Method of Measurement: This work will be measured by the actual square foot of existing steel at designated areas where paint was removed, surfaces cleaned, re-painted and accepted. **Note:** In some instances when **new steel** is being added to the designated areas where the paint was removed, the removal area may not equal the area to be re-painted. Measurement in these cases will be by the actual s.f. of existing steel where the paint was removed and accepted.

Basis of Payment: This work will be paid for at the unit price per square foot for "Localized Paint Removal and Field Painting of Existing Steel," complete in place, which price shall include all materials, containments, collection, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work. No direct payment will be made for the cost of storage or hauling the paint and other materials, including paint chips and associated debris, to and/or from the bridge site, but the cost thereof shall be included in the contract unit price.

The work to dispose of lead paint debris will be paid under "Item 0020903A – Lead Compliance for Miscellaneous Exterior Tasks"

Pay Item
Localized Paint Removal and Field Painting Of Existing Steel

Pay Unit
S.F.

ITEM #0603768A – STRUCTURAL STEEL

Article 6.03.01 – Description: is supplemented as follows:

Work under this item shall consist of furnishing, fabricating, transporting, storing, handling and installing structural steel plates and steel angles for the purpose of repairing deteriorated beam webs, flanges, and stiffeners of the type and size designated, as shown on the plans, as directed by the Engineer and in accordance with these specifications.

This special provision provides additional requirements for the surface preparation, shop painting, and field touch-up painting of new structural steel.

Work under this item shall conform to the requirements of Section 6.03, supplemented and amended as follows:

Article 6.03.02 – Materials: The materials for this work shall conform to the requirements of AASHTO M270, Grade 50T2.

Painting materials for this work shall conform to the following:

- The Contractor shall select a three-coat system from the qualified products Lists A and B issued by the Northeast Protective Coating Committee (NEPCOAT), except System No. SSC(03)-02, comprised of Carbozinc 859 organic zinc rich primer, Carboguard 888 epoxy polyamide, and Carbothatne 133HB aliphatic Polyurethane that shall not be permitted. The approved NEPCOAT listings may be found at the NEPCOAT website at <http://www.maine.gov/mdot/nepcoat/index>. The system chosen shall have a prime coat that has achieved a Class ‘B’ slip coefficient. Top coat paint color shall be as noted on the plans.
- Both the shop painted and field touchup applied coating systems shall be of the same three-coat system. The same coating material manufacturer shall furnish all materials for the complete coating system. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer’s written instructions.

Article 6.03.03 – Construction Methods:

Following the last paragraph of the article, add the following:

The painting application shall be done in compliance with the following requirements:

Qualification of Shop Painting Firm: All shop painting of structural steel must be performed by and in an enclosed shop that is certified by the SSPC Painting Contractor Certification Program QP-3, entitled “Standard Procedure for Evaluating Qualifications of Shop Painting Contractors” in the enclosed shop category or that holds an AISC Quality Certificate with a “Sophisticated Paint Endorsement” in the enclosed shop category. They shall be fully certified,

including endorsements, for the duration of the time they are performing the surface preparation and coating application. A copy of the subject certification shall be provided to the Engineer prior to commencing any surface preparation or coating application.

The complete coating system shall be applied in an enclosed shop except for field touch-up painting which shall be applied after all bolts are fully tensioned and deck formwork removed. The enclosed shop shall be a permanent facility with outside walls to grade and a roof where surface preparation and coating activities are normally conducted in an environment not subject to outdoor weather conditions and/or blowing dust.

Quality Control Inspection of Shop Painting: The firm performing shop painting of the structural steel shall have a written quality control (QC) program. A copy of the QC program and record keeping procedures shall be provided to the Engineer prior to commencing any surface preparation or coating application. The program shall contain, but not be limited to, the following:

1. Qualifications of QC staff.
2. Authority of QC staff. QC staff must have the authority to stop non-conforming work.
3. Procedure for QC staff to advise operation supervisor, in writing, of non-conforming work.
4. Sample copy of QC inspection reports that will document compliance with specification.
5. Procedure for calibrating inspection equipment and recording calibration.
6. Procedure for repairing defective coating applications.

The Contractor or Shop shall provide at least one Quality Control Inspector for the duration of the shop application to provide Quality Control. The QC Inspector must be a National Association of Corrosion Engineers (NACE) Coating Inspector Certificated with Peer Review. The QC Inspector shall verbally inform the Engineer on a daily basis, of the progress and any corrective actions performed on the coating work. The QC Inspector shall be present during all cleaning and coating operations.

The Contractor or Shop shall be responsible for purchasing and providing the latest version of the NACE Coating Inspector Log Book(s) and all necessary inspection tools. The Contractor's QC Inspector shall stamp the front page of each inspector's log book used during painting operations. The stamped book(s) shall indicate the inspector's NACE certification number, certification expiration date and shall also be signed. All daily coating activity shall be recorded in the Log Book. Copies of the log entries shall be provided on a daily basis to the Department's Quality Assurance (QA) shop representative. Upon completion of the coating, the log book(s) shall then be furnished to the Department's QA shop representative.

Technical Advisor: The Contractor or Shop shall obtain the services of a technical advisor who is employed by the coating manufacturer to assist the Engineer and shop painting firm during this work. The technical advisor shall be a qualified representative and shall be made available at the Shop upon request by the QC Inspector or the Engineer.

Surface Preparation: The following shall be performed prior to abrasive blast cleaning of steel members:

- All corners and edges shall be rounded to a 1/16-inch radius or chamfered to a 1/16-inch chamfer.
- All fins, slivers and tears shall be removed and ground smooth.
- All rough surfaces shall be ground smooth.
- Flame cut edges shall be ground over their entire surface such that any hardened surface layer is removed, and subsequent abrasive blast cleaning produces the specified surface profile depth.

Immediately before abrasive blast cleaning all steel members shall be solvent cleaned in accordance with SSPC-SP1 - "Solvent Cleaning."

Abrasive blast cleaning shall be performed in accordance with SSPC-SP 10 - "Near White Blast Cleaning" using a production line shot and grit blast machine or by air blast. The abrasive working mix shall be maintained such that the final surface profile is within the range specified elsewhere in this specification.

The QC Inspector shall test the abrasive for oil, grease or dirt contamination in accordance with the requirements of ASTM D7393 and document the test results. Contaminated abrasive shall not be used to blast clean steel surfaces. The blast machine shall be cleared of all contaminated abrasive and then solvent cleaned thoroughly in accordance with SSPC-SP 1 "Solvent Cleaning". New uncontaminated abrasive shall be added. Abrasive shall be tested for contaminants in accordance with the requirements of ASTM D7393 prior to the start of blast cleaning operations and at least every four hours during the blast cleaning operations.

All compressed air sources shall have properly sized and designed oil and moisture separators, attached and functional, to allow air at the nozzle, either for blast cleaning, blow-off, painting or breathing, to be oil-free, and moisture-free. They shall have sufficient pressure to accomplish the associated work efficiently and effectively.

The QC Inspector shall perform the blotter test and document the results at the start of each blasting shift and at least every four hours during the blasting operation to ensure that the compressed air is free of oil and moisture. The blotter test shall be performed in accordance with the procedure outlined in ASTM D4285. For contaminated air sources, the oil and moisture separators shall be drained and the air retested.

No surface preparation or coating shall be done when the relative humidity is at or above 80 percent or when the surface temperature of the steel is less than five (5) degrees Fahrenheit above the dewpoint temperature as determined by a surface thermometer and an electric or sling psychrometer.

Surface Profile: The steel surface profile shall be 1 to 3 mils. Each girder or beam shall have the surface profile measured at a minimum of three locations in accordance with the test requirements

of ASTM D4417, Method C. Smaller pieces such as diaphragms shall have the surface profile measured at a minimum of three locations on one piece at the beginning of abrasive blast operations and at least every four hours and at the end of abrasive blast cleaning operations. This measurement shall be performed with both coarse (0.8-2.0 mils) and extra coarse (1.5-4.5 mils) replica tape. During this measurement, special attention shall be given to areas that may have been shielded from the blast wheels, such as the corners of stiffeners and connection plates. The impressed tapes shall be filed in the NACE Coating Inspector's Log Book. Note: When measuring the profile on the tape, 2 mils shall be subtracted (non-compressible mylar thickness) from the micrometer reading as indicated on each piece of tape.

A surface profile correction factor shall be measured in accordance with SSPC-PA 2 section 2.2.4 with a "Type 2" magnetic film thickness gage.

Application Methods: The coating system shall be applied by spray equipment of a type and size capable of applying each coat within the required thickness range. The applicator shall strictly adhere to the manufacturer's written recommendations about application methods, cure times, temperature and humidity restrictions and recoat times for each individual coat of the specified system. However, in no case shall coatings be applied in ambient conditions that exceed the relative humidity and dewpoint temperature control limits specified elsewhere within this special provision. Brushes shall be used in areas where spray application will not achieve acceptable results. Brushing technique shall be performed in a manner that will provide a uniform, blended finish.

Conventional spray equipment with mechanical agitators shall be used for prime coat application.

All storage, mixing, thinning, application and curing techniques and methods shall be accomplished in strict accordance with the printed material data sheets and application instructions published by the respective coating material manufacturer.

Surfaces shall be painted with the specified prime coat material before the end of the same work shift that they were blast cleaned and before any visible rust back occurs. Applied coatings shall not have runs, sags, holidays, pinholes or discontinuities.

The dry film thickness shall be within the range specified in the manufacturer's printed literature for the specified coating system. Dry film thickness shall be measured in accordance with SSPC-PA 2. The prime, intermediate and top coats shall be of contrasting colors as determined by the Engineer. There shall be no color variation in the topcoat as determined by comparison with Federal Standard 595.

Areas Requiring Special Treatment: All steel surfaces shall receive the three-coat shop applied system as specified except the following particular area types which shall be treated as follows:

- 1) Faying surfaces of connections shall receive only a single application of primer. The dry film thickness shall be no greater than the thickness tested on the coating manufacturer's Certified Test Report for slip coefficient.

- 2) For the field repair of existing steel members that are to be fully field painted after the completion of repairs, new steel plates and shapes to be used for those repairs shall receive (at the shop) only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 3) All steel surfaces within four (4) inches of field welds shall receive only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 4) Top surfaces of top flanges that will be in contact with concrete shall receive only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 5) Edges and shop welds shall be locally hand-striped with a brush in the longitudinal direction with an additional coat of an appropriate zinc-rich primer prior to application of the full intermediate coat. The application of the striping materials shall be in accordance with the coatings manufacturer's written instructions. The striping material shall be a contrasting color to distinguish it from the primer and intermediate coats.
- 6) The interior surfaces of box girders, including bracing, shall be prepared in accordance with these specifications then coated with the first two coats of the three-coat system. The intermediate coat in these areas shall be white and match Federal Standard 595 Color Number 27925.

Adhesion: Adhesion strength of the fully coated assemblies shall be the more restrictive of the manufacturer's specified adhesion strength or at least 600 psi for systems with organic zinc primers and at least 250 psi for systems with inorganic zinc rich primers measured as per ASTM D4541 using apparatus under Annex A4. All adhesion test locations shall be recoated in accordance with this specification at no additional cost. The QC Inspector shall perform adhesion strength tests every 500 sq. ft. and document the adhesion strength test results.

If adhesion test results are less than the specified value, but equal to or greater than 80% of the specified value, four (4) additional adhesion tests shall be taken within the 500 sq. ft. area of the failed test. If any of the additional adhesion tests are less than the specified value the coating shall be removed from the entire piece and re-applied at the Contractor's expense. The entire coating system shall be removed from a piece if any adhesion tests are less than 80% of the specified value and re-applied at the Contractor's expense.

Smaller pieces such as diaphragms shall be analyzed in lots that have an overall coated surface area of approximately 500 sq. ft.

Protection of Coated Structural Steel: All fully coated and cured assemblies shall be protected from handling and shipping damage with the prudent use of padded slings, dunnage, separators and tie downs. Loading procedures and sequences shall be designed to protect all coated surfaces. Erection marks for field identification of members and weight marks shall be affixed in such a manner as to facilitate removal upon final assembly without damage to the coating system.

Qualification of Field Touchup Painting Contractors: All painting contractors and painting subcontractors used for all field touchup painting must be certified by the SSPC Painting Contractor Certification Program (PCCP), QP-1, entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures” at the time of field touchup coating application. This certification must be full and not interim. The painting contractors or subcontractors must remain so certified for the duration of the field coating application. If a contractor’s or subcontractor’s certification expires, the painting firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply.

Quality Control Inspection of Field Touchup Painting: The contractor performing field touchup painting of the structural steel shall have a written quality control (QC) program. A copy of the QC program and record keeping procedures shall be provided to the Engineer prior to commencing any surface preparation or coating application. The program shall contain, but not be limited to, the following:

1. Qualifications of QC staff.
2. Authority of QC staff. QC staff must have the authority to stop non-conforming work.
3. Procedure for QC staff to advise operation supervisor, in writing, of non-conforming work.
4. Sample copy of QC inspection reports that will document compliance with specification.
5. Procedure for calibrating inspection equipment and recording calibration.
6. Procedure for repairing defective coating applications.

The Contractor shall provide at least one Coating Inspector who is Certificated and peer reviewed with the National Association of Corrosion Engineers (NACE) for the duration of the field application to provide Quality Control. The QC Inspector shall verbally inform the Engineer on a daily basis, of the progress and any corrective actions performed on the coating work. The QC Inspector shall be present during all cleaning and coating operations.

The Contractor shall be responsible for purchasing and providing the latest version of the NACE Coating Inspector Log Book(s) and all necessary inspection tools. The Contractor’s QC Inspector shall stamp the front page of each inspector’s log book used during painting operations. The stamped book(s) shall indicate the inspector’s NACE certification number, certification expiration date and shall also be signed. All daily coating activity shall be recorded in the Log Book. Copies of the log entries shall be provided on a daily basis to the Department’s Quality Assurance (QA) field representative. Upon completion of the coating, the log book(s) shall then be furnished to the Department’s QA field representative.

Field Touch-Up Painting of Shop applied coating: The field applied coating for touchup painting shall be the same system used in the shop applied application. Field application of coatings shall be in accordance with the manufacturer’s written application guidelines and these specifications. All areas cleaned to bare metal must be coated with zinc-rich primer before any visible rusting occurs. The intermediate and topcoat material for field touch-up painting shall be

from the same lot and batch used in the shop provided its shelf life has not expired. If the shelf life has expired, the same material of the same color from a different lot and batch shall be used.

After all concrete is placed and the forms are removed, all rust, scale, dirt, grease, concrete splatter and other foreign material shall be completely removed from all painted surfaces. All surfaces to be field painted shall also be cleaned by solvent cleaning in accordance with SSPC-SP 1, hand tool cleaning SSPC-SP 2, and power tool cleaning SSPC-SP 3 and SSPC-SP 11. Areas cleaned to SSPC-SP 11 must have a 1-3 mil profile and must be primed prior to rusting. All debris generated from cleaning operations must be contained and properly disposed of by the Contractor.

Bolts, nuts, washers and surrounding areas shall receive brush applications of intermediate and topcoat after final tensioning. Careful attention shall be given to bolted connections to insure that all bolts, nuts and washers are fully coated and that no gaps are left unfilled and uncoated.

Field welds and surrounding areas shall be treated in the same manner as shop welded areas, including special treatment requirements.

Damage to the coating system that extends to the steel surface (such as scratches, gouges or nicks), shall have the entire three-coat system locally reapplied after power tool cleaning to bare metal in accordance with SSPC-SP 11. The coating system adjacent to the damage shall be feathered back to increase the surface area for touch up painting. The area cleaned to SSPC-SP 11 shall be primed with a zinc-rich primer before rusting occurs.

Damage to the coating system that extends back only to the prime or intermediate coat, shall only have the topcoat applied. Application of the touch-up materials in these damaged areas shall be performed by brush only.

Quality Control Inspection of Shop Painting: The firm performing shop painting of the structural steel shall have a written quality control (QC) program. A copy of the QC program and record keeping procedures shall be provided to the Engineer prior to commencing any surface preparation or coating application. The program shall contain, but not be limited to, the following:

Article 6.03.04 – Method of Measurement: This work will be measured for payment at the contract unit price per pound of new steel complete and accepted in place.

The weight of the structural steel to be measured for payment under this item shall be computed on the basis of the net finished dimensions of the plates based on measurements taken by the Engineer, deducting for copes and cuts. The weight of weld metal and temporary erection bolts, boxes, crates, and other containers used for shipping, materials used for supporting members during transportation and erection, and weld metal shall not be measured for payment.

Article 6.03.05 – Basis of Payment: The structural steel, incorporated in the completed and accepted structure, will be paid for at the contract unit price per pound for "Structural Steel."

Payment shall be for structural steel, complete in place, which price shall include fabricating, painting, furnishing, transporting, storing, erecting and installing the plates, all welding and weld inspection, and all other materials, equipment, tools, labor and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Structural Steel	lb.

ITEM #0503947A – JACKING EXISTING BEAMS

Description: This work shall consist of jacking existing beams/girders the minimum amount necessary to permit removal and replacement of the existing bearings as ordered by the Engineer.

Materials: Timber, steel or other suitable materials may be used as required to facilitate jacking of the existing beams. The materials used shall be of satisfactory quality, and capable of safely carrying the actual loads. All materials shall be approved by the Engineer before use.

Construction Methods: Wherever arc gouging, flame cutting, or welding will be used, existing lead paint must first be removed as specified in “Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel”.

The existing diaphragms shall be released before jacking, as indicated on the stage construction plans and as ordered by the Engineer.

The Contractor shall prepare and submit to the Engineer working drawings and computations for the temporary construction required to complete this work in accordance with Article 1.05.02. These drawings shall include complete details of the methods, materials and equipment he proposes to use. The drawings shall bear the seal of a Professional Engineer licensed in the state of Connecticut. Work shall not be started until approval from the Engineer has been obtained.

Jacks of sufficient capacity and number shall be used to raise the beam the minimum amount necessary to permit all work as indicated on the plans. Jacking against the concrete bridge deck or any portion thereof will not be permitted. No stringer shall be jacked more than 1/4” relative to its adjacent stringer.

The Contractor, as directed by the Engineer, shall take adequate precautions to prevent any materials from dropping to the area below, which may result in damage to any permanent construction or to adjoining property.

Should any damage occur to the structure as a result of the Contractor's operations, the Contractor shall make repairs at his own expense. The repair work shall be approved in advance and shall be of a quality suitable to the Engineer.

Method of Measurement: This item will be measured for payment by the number of bearing locations jacked to perform all work indicated in the plans and ordered by the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price each for "Jacking Existing Beams", which price shall include all materials, tools, equipment and labor incidental thereto.

ITEM #0503949A - DISCONNECT AND RECONNECT EXISTING DIAPHRAGMS

Description: Work under this item shall consist of disconnecting existing end bearing diaphragms and lateral bracing that are welded and/or bolted to connection plates, and reconnecting same as shown on the plans or as ordered by the Engineer.

Materials: New high strength bolts shall conform to ASTM A325, Type 1. Heavy hex nuts shall conform to ASTM A563, Grade C. Standard, circular washers shall conform to ASTM F436. Plate washers shall conform to ASTM A36.

Construction Methods: Wherever arc gouging, flame cutting, or welding will be used, existing lead paint shall be removed as specified in “Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel”.

The diaphragms and lateral bracing shall be disconnected at the locations shown on the plans. Work shall be done in accordance with the details and phases of construction noted on the plans.

Slots shall be made in connection plates/diaphragms to the dimensions indicated in the plans. Plate washers and bolts shall also be installed in accordance with the plans.

The Contractor shall take all precautions as may be necessary to prevent damage to the existing structure.

The removal of the weld material shall be done by machining, grinding, chipping, or air carbon-arc gouging and in such a manner that the remaining base metal is not wicked or undercut. A minimum of 1/8” of weld metal shall be left in place if arc gouging is the selected removal method and the remaining weld metal shall be removed by grinding. Welders who perform arc gouging shall be SMAW certified.

The diaphragms and lateral bracing shall be reattached by welding to existing plates at the original connection locations in accordance with the details and phases of construction noted on the plans.

All new weld areas and hardware shall also be field painted (paid for under separate item).

The Contractor shall protect property, pedestrians, vehicular and other traffic underneath or in the vicinity of the bridge, and also portions of the bridge superstructure and substructure against damage from errant coating materials.

Method of Measurement: This work will be measured by the actual number of existing diaphragms and lateral bracing that have been disconnected and then later reconnected.

Basis of Payment: This work will be paid for at the contract unit price each for "Disconnect and Reconnect Existing Diaphragms", complete in place, which price shall include all equipment, tools, materials, and labor incidental thereto.

ITEM #0503968A-DISCONNECT AND RECONNECT EXISTING CROSS FRAMES

Description: Work under this item shall consist of disconnecting existing cross frames that are welded and/or bolted to connection plates, and reconnecting the same cross frames in accordance with the plans or as ordered by the Engineer.

Materials: New high strength bolts shall conform to ASTM A325, Type 1. Heavy hex nuts shall conform to ASTM A563, Grade C. Standard, circular washers shall conform to ASTM F436. Plate washers shall conform to ASTM A36.

Construction Methods: Wherever arc gouging, flame cutting, or welding will be used, existing lead paint must first be removed as specified in "Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel".

The cross frames shall be disconnected at the locations shown on the plans. Work shall be done in accordance with the details and phases of construction noted on the plans.

Slots shall be made in connection plates to the dimensions indicated in the plans. Plate washers and bolts shall also be installed in accordance with the plans.

The Contractor shall take all precautions as may be necessary to prevent damage to the existing structure.

The removal of the weld material shall be done by machining, grinding, chipping, or air carbon-arc gouging and in such a manner that the remaining base metal is not wicked or undercut. A minimum of 1/8" of weld metal shall be left in place if arc gouging is the selected removal method and the remaining weld metal shall be removed by grinding. Welders who perform arc gouging shall be SMAW certified.

The cross frames shall be reattached by welding to the existing connection plates at the original connection locations in accordance with the details and phases of construction noted on the plans.

All new weld areas and hardware shall also be field painted (paid for under separate item).

The Contractor shall protect property, pedestrians, vehicular and other traffic underneath or in the vicinity of the bridge, and also portions of the bridge superstructure and substructure against damage from errant coating materials.

Method of Measurement: This work will be measured by the actual number of existing cross frames that have been disconnected and then later reconnected.

Basis of Payment: This work will be paid for at the contract unit price each for "Disconnect and Reconnect Existing Cross Frames", complete in place, which price shall include all equipment, tools, materials, and labor incidental thereto.

ITEM #0521003A – BEARING REPLACEMENT WITH ELASTOMERIC BEARING PADS

Description: Work under this item shall consist of removing existing bronze bearings and replacing them with new elastomeric bearing pads for Bridge No. 00608. Included in this item are cutting of existing anchor bolts; removal and salvage of existing bronze bearings; refinishing concrete pads, and installing the new elastomeric bearings in accordance with the plans.

Materials:

1. Elastomer: The elastomeric compound, used in the construction of the bearings, shall contain only virgin polychloroprene (Neoprene) as the raw polymer. The elastomer compound shall be low temperature grade 3 (as defined by the testing requirements), have a Shore "A" Durometer hardness as shown on the plans and meet the requirements of the AASHTO Standard Specifications for Highway Bridges, Division II - Construction.

The elastomeric shims shall be neoprene, with a Shore "A" Durometer hardness of 60 and a low temperature grade 3, 1/16" and 1/8" thick and conform to the requirements of the AASHTO Standard Specifications for Highway Bridges, Division II - Construction.

2. Steel Laminae: The internal steel laminae, used for reinforcement, shall be a mild rolled steel conforming to ASTM A570M Grade 250 or 275, ASTM A611 Grade C or D, or an approved equal.

3. External Load Plates: Shall conform to the requirements of the plans.

All surfaces of the external load plates shall be abrasive blast cleaned prior to being hot bonded to the bearing during vulcanization.

After fabrication, the new steel connection plates, tab plates and load plates shall be shop painted using a zinc primer.

Adhesive bonding of the elastomer portion of the bearings to the external load plates is not permitted.

4. Fabrication and Fabrication Tolerances: The fabrication and fabrication tolerances of elastomeric bearings shall conform to the requirements of the AASHTO Standard Specifications for Highway Bridges, Division II - Construction.

If guide pins or other devices are used to control the side cover over the steel laminae, any exposed portions of the steel laminae shall be sealed by vulcanized patching.

5. Testing: The materials for the elastomeric bearing and the finished bearings themselves shall be subjected to testing. The testing shall conform to the requirements of the AASHTO Standard Specifications for Highway Bridges, Division II - Construction.

Test bearings, in addition to the bearings shown on the plans, shall be furnished for each type (size and thickness) of bearing for destructive testing. The test bearings shall be furnished without external load plates.

6. **Marking:** Each steel-laminated elastomeric bearing shall have marked on it, with indelible ink, the following: the Manufacturer's identification code or symbol, the month and year of manufacture, the orientation, order number, lot number, bearing identification number, and elastomer type and grade (Neoprene, Grade 3). The markings should be placed on a side of the bearing that is visible after installation.

7. **Certification:** The Contractor shall furnish a Certified Test Report, confirming that the elastomeric bearings satisfy the requirements of these specifications, in conformance with the requirements set forth in Article 1.06.07.

8. **Adhesive:** The adhesive for bonding the shims shall be a long lasting, high strength, cold applied, air cured, water and heat resistant material specifically formulated for bonding neoprene and shall meet the following requirements:

Property	Requirement	ASTM Test Procedure
Adhesion	30 lbs/inch	D429, Method B
Hardness	50 \pm 5 Shore A points	D2240
Tensile Strength, min	1800 psi	D412
Elongation before breaking, min.	750 %	D412

9. **Connecting Bolts:** High strength bolts shall conform to ASTM A325 with matching hardware.

10. **Delivery:** A minimum of thirty (30) days prior to the installation of the elastomeric bearings the Contractor shall deliver to the job site the required number of bearings for installation plus the required number of test bearings. Bearings shall be packed in containers holding no more than ten (10) bearings. The bearings in one container shall be of the same type, size and shall be for one structure only. The containers shall be plainly marked with the project number, the bridge or structure number, the number of bearings, the name of the Manufacturer and the lot number.

Construction Methods: Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer, for review and approval, in accordance with Subarticle 1.05.02. These drawings shall include, but not be limited to, the following information: Manufacturer's name, complete details of the bearings, material designations, nominal hardness of the elastomer, the quantity of bearings required, including test bearings, and the location of the bearing identification.

Wherever arc gouging, flame cutting, or welding will be used, existing lead paint must first be removed as specified in "Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel".

Removal of the existing bronze bearing assemblies shall be by methods that do not damage them. The Engineer shall determine the salvagability of the bearing assemblies and direct the contractor to salvage or dispose of them accordingly. The salvage or proper disposal of the bearing assemblies shall be included in the cost of the item. If the Engineer determines that the bearing assemblies shall be salvaged, they shall be properly stored until they are delivered to the specified DOT salvage facility. Since lead paste may be present under the existing bearings, the use of flame cutting equipment to cut the swedge bolts is not allowed. The method of removal shall be by sawing of the bolts unless another method is approved by the Engineer.

Any salvaged bearings shall go to:

District 4 – Bridge Maintenance Garage
80 Fowler Avenue
Torrington, CT 06790
Contact: Scott Thibault
Phone: (860) 489-3773

The Contractor shall be responsible for loading, transporting, and off-loading the salvaged bearing assemblies.

Tarps shall be used by the Contractor to prevent debris from the work operations from falling onto the ground. This debris shall be disposed of properly under the applicable contract items.

The concrete bearing pads will be inspected prior to the installations. Portions of protruding swedge bolts shall be cut off below the surface of the concrete and the holes filled in with non-shrink grout. All other cracks, spalls, or deterioration shall be repaired as ordered by the Engineer.

The concrete bearing pads shall have smooth, even, and level surfaces. They shall show no variation from a true plane greater than 1/16" over the entire area upon which the elastomeric bearings are to rest. The concrete shall be finished by grinding as required to achieve these requirements. The concrete bearing pads shall be cleaned of all debris just prior to installation of the elastomeric bearings.

The elastomeric bearings shall be installed as shown on the plans. The elastomeric bearings shall be installed when the temperature of the ambient air and the bearings is between 40 deg. F to 80 deg. F and has been within this range for at least 2 hours.

Adhesive bonding of the elastomeric bearings to steel and concrete surfaces is not permitted.

Welding with the elastomeric bearings in place will not be permitted unless there is more than 1.5" of steel between the weld and the elastomer. In no case shall the elastomer be exposed to temperatures greater than 400 deg. F. Temperature Indicating Crayons shall be used during field welding to assure that these temperature restrictions are not exceeded. Welding shall conform to the requirements of Subarticle 6.03.03-4.

The external load plates of each bearing shall be fastened to the connection plates by high strength bolts as indicated on the plans. Bolting shall conform to Article 6.03.03 – 4. Bolts shall be properly lubricated prior to installation.

The elastomeric bearings shall rest uniformly on the concrete bearing pads **when the bearings are under the full dead load of the completed superstructure.** If uniform contact is not present the gaps beneath the bearing shall be filled by inserting elastomeric shims that are slightly thinner than the gaps. The Contractor, in the presence of the Engineer, shall measure the gaps to determine the locations and sizes of the shims.

The individual shims shall be bonded to the elastomer portion of the bearing with adhesive applied over the entire shim interface. The surface preparation, application and curing of the adhesive shall be in accordance with the Manufacturer's recommendations. If shims in excess of 1/8" thick are required, multiple shims shall be bonded together. Shimming of areas that vary in thickness shall be done by stepping the shims.

Method of Measurement: This work shall be measured for payment by the actual number of elastomeric bearings installed and accepted. No allowance shall be made for test bearings.

Basis of Payment: This work shall be paid for at the contract unit price each for "Bearing Replacement with Elastomeric Bearing Pads" complete, in place and accepted, which price shall include disposal and/or salvage of the existing bearings, refinishing of concrete pads, all vulcanized external load plates, primer, test bearings, shims, adhesive, and all materials, equipment, tools and labor incidental thereto.

ITEM #0601073A – CLASS “S” CONCRETE

SECTION 6.01 - CONCRETE FOR STRUCTURES *is supplemented to provide for a Class "S" super-plasticized concrete.*

Article 6.01.01 - Description: Class "S" concrete is to be used to fill and repair voids in horizontal and vertical surfaces of concrete areas greater than 2 square feet 3/4" deep (exclusive of deck slabs) as detailed on the plans or as directed by the Engineer.

Work under this item shall consist of removing loose concrete, deteriorated concrete, and concrete overlaying hollow areas, and patching these areas as well as spalled and scaled areas with Class "S" Concrete formed to the original contour. Work under this item shall also consist of removing sound concrete beneath stirrups in order to properly anchor the Class "S" repair material in place. The work shall also include any saw cutting or chiselling, sandblasting and cleaning of areas to be patched with concrete. Work under this item shall also include sandblasting and cleaning any exposed reinforcing steel, and coating the exposed reinforcing steel with zinc-rich primer prior to placing concrete.

The Contractor shall not perform any repair work without prior approval by the Engineer for location, limits, and type of repairs.

Article 6.01.02 - Materials: Materials shall conform to Section M.03 as modified herein below:

M.03.01 - General Composition of Concrete Mixes is supplemented to include Class "S" Superplasticized concrete.

<u>TYPE</u>	<u>PROPORT. BY WT. APPROX.</u>	<u>WATER PER BAG MAX.</u>	<u>CEM. FACTOR</u>
Class "S"	1:2.16:2.20	5.7 (Gals.)	7.0 (Bags/C.Y.)

1 - Coarse Aggregate:

(c) Grading: Coarse Aggregate for the Class "S" concrete shall meet the following gradation requirements:

For Class "S": The required grading shall be obtained by using 100 percent 3/8" coarse aggregate.

3 - Cement: Add the following:

Type I or II Portland Cement shall be used for Class "S" Concrete.

9 - Admixtures:

(c) Delete in its entirety and substitute the following:

(c) Superplasticizing Admixtures: The superplasticizer admixture shall be a high-range water reducer (HRWR) capable of increasing the slump of the mix from approximately 2.5" to 7" upon the addition of the amount recommended by the respective manufacturer. The HRWR shall conform to ASTM C494 Type F or Type G and shall be approved by the Engineer. The use of this material shall be in strict accordance with the respective manufacturer's written instructions and procedures.

10 - Curing Materials:

(c) Liquid Membrane Forming Compound: *Add the following:*

No liquid membrane forming compound shall be used for Class "S" concrete.

16 - Zinc Primer: *(New) Add the following:*

The single component zinc primer shall conform to Federal Specification TT-P-641, Type 1 and shall be brush applied in two successive coats.

Article 6.01.03 - Construction Methods:

Article 6.01.03 is supplemented by adding the following text. Where this specification deviates from the Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, the intent of this text shall govern.

5 - Composition: *Add the following:*

Class "S" concrete shall conform to the requirements as specified in M.03.01 as amended herein. Class "S" concrete shall contain not less than 6.5 percent and not more than 8.5 percent entrained air at the time of placement.

The Class "S" concrete shall have a minimum 3,000 psi compressive strength at 28 days.

6 - Consistency: *Add the following:*

Class "S" concrete shall have a slump range of 2" to 4" prior to the addition of the HRWR and from 6" to 8" slump after the addition of the HRWR. The addition rates of the air-entraining admixture (A.E.A.) and the HRWR will vary. Frequent field testing of the air content and slump prior to and after addition of the HRWR will be the determining factor of actual addition rates for each admixture.

7 - Mixing Concrete: *Add the following:*

For hand mixing of Class "S" concrete, the Contractor shall provide scale(s) approved by the Engineer in which cement and aggregate can be accurately weighed for the required mix proportions.

The Contractor shall also have measuring graduates marked in ounces (oz.) for the proportioning of the A.E.A. and the HRWR. Do not mix the A.E.A. and the HRWR together before adding to the mix; the resultant solution will not work. DO NOT add the A.E.A. and the HRWR at the mixer simultaneously; these admixtures must be added separately in the mixing cycle. All manufactured materials shall be stored, mixed and used in strict accordance with the written recommendations of the respective manufacturers.

19 - Curing Concrete: *Add the following:*

Concrete shall be cured by leaving forms on for seven (7) days and wetting them frequently.

21 - Surface Finish: *Delete the entire sub-article and add the following:*

The external surface of all concrete shall be thoroughly worked during the operation of placing by means of tools of an approved type. The working shall be such as to force all coarse aggregate from the surface and thoroughly work the mortar against the forms to produce a smooth finish free from water and air pockets, segregated materials, or honeycomb. All horizontal surfaces shall be formed by placing an excess of material in the forms and removing or striking off such excess by means of a tool of an approved type, forcing the coarse aggregate below the mortar surface.

Immediately after the forms have been removed, all voids and honeycombs on the surface shall be filled and finished to conform to the surrounding concrete surface with a mortar of fine aggregate and Portland Cement of the same materials and coloration as that of the particular concrete being treated. This work shall be performed immediately after removal of forms and before the finishing process is started.

Following the filling of voids and honeycombs, concrete surface shall be given one of the following concrete finishes, similar to adjacent existing concrete surface, as indicated on the plans, or as directed by the Engineer.

25 - Material Storage: *(New) Add the following:*

The Contractor shall store and maintain the A.E.A. and the HRWR materials in clean original containers as delivered by the manufacturer.

27 - Repair Procedure: *(New) Add the following:*

Before any concrete is removed, the Engineer shall perform an inspection to determine the exact limits and locations of all areas to be repaired under this item. The Contractor shall provide all scaffolding necessary to carry out this inspection. The limits of each area to be repaired shall be suitably marked.

After the deteriorated concrete has been removed from the designated areas, a repair type (Class "S" Concrete or Variable Depth Patch) will be determined by the Engineer. Where "Class "S" Concrete" is to be used, the Contractor shall perform repairs in accordance with the repair details indicated on the plans and in these specifications.

The perimeter of each patch shall be sawcut 1/2" deep. Care shall be taken not to cut existing reinforcing.

Loose and deteriorated concrete shall be chipped away back to sound concrete and at least 1" beneath the stirrups. The exposed surfaces shall be thoroughly sandblasted and vacuumed immediately prior to forming.

Hollow areas in the existing concrete shall be completely exposed by chipping away back to sound concrete and at least one inch beneath the stirrups. The exposed surfaces shall be thoroughly sandblasted and vacuumed immediately prior to forming.

Spalled and scaled areas shall be cleaned of all loose and deteriorated concrete. The exposed surfaces shall be thoroughly sandblasted and vacuumed immediately prior to forming.

Removal of unsound concrete material shall be such to facilitate uniform placement of fresh concrete; all areas of excavated voids shall slope evenly out to within 1" of the face of the concrete to preclude entrapping air and forming hollow spots in the freshly placed concrete. Within 1" of the surface, the outline shall be essentially normal (perpendicular) to the surface.

All surfaces of exposed concrete and reinforcing steel shall be free of oil, solvent, grease, dirt, dust, bitumen, rust, loose particles and foreign matter. Prior to sandblasting of concrete and steel surfaces, all petroleum contamination on these surfaces shall be removed by appropriate solvent or detergent cleaning operations.

Extreme care shall be taken, where reinforcing steel is uncovered, not to damage the steel. Pneumatic tools shall not be placed in direct contact with reinforcing steel. Maximum 30 lb. size hammers shall be used for general chipping and removal while maximum 15 lb. size shall be used behind reinforcing steel. Exposed reinforcing shall remain in place except where specifically indicated for removal by direction of the Engineer. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP-6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

In all repair areas the deteriorated concrete shall be removed from under the stirrups to a depth of 1" min. The stirrups shall also be tied as ordered by the Engineer.

All exposed blast-cleaned reinforcing steel shall be coated with two coats of the single component zinc-rich primer, brush applied (note--the second coat shall only be applied after the first has dried). Applications of the zinc primer shall be in accordance with the manufacturer's printed instructions.

Where the existing reinforcing steel is severely corroded or damaged, new reinforcing steel shall be installed in accordance with the plans. Where existing steel is determined by the Engineer to have insufficient cover, the cover shall be increased to a minimum of 2". New steel shall be attached to existing steel as indicated on the plans and as directed by the Engineer.

When using sandblasting equipment, all work shall be shielded for the protection of the public.

All compressed air equipment used in cleaning shall have properly sized and designed oil separators, attached and functional, to assure the delivery of oil-free air at the nozzle.

Adequate measures shall be taken by the Contractor to prevent concrete chips, tools and/or materials from entering into adjacent roadway lanes or dropping to areas below the structure. All debris shall be promptly swept up and removed from the site. All materials removed shall be satisfactorily disposed of by the Contractor.

All excavated areas on surfaces of concrete members shall be formed using forms coated with a plastic or similar film to preclude the use of form release agents. Forms and support systems shall be properly designed in accordance with M6.01.03-03. Forms shall be so designed that placement access shall be allowed at the top of each respective formwork assembly for contiguous void areas.

No bonding compounds shall be used before or during the placement of this concrete material. Concrete surfaces against which this material is to be placed shall be sound, tight, and thoroughly roughened by the removal and sandblasting procedures specified above. The exposed concrete surfaces shall be dampened with fresh water immediately prior to placement of the fresh concrete by "hosing" down the areas behind the forms as thoroughly as possible. Light rust formations on sandblasted reinforcing steel prior to concrete placement is normal and acceptable.

The minimum ambient and patch area surface temperature shall be 45 deg. Fahrenheit and rising at the time of concrete installation.

Prior to forming up vertical surfaces, reinforcing steel welded wire fabric conforming to the requirements of M.06.01-3 shall be installed at the proper depth to those areas greater than 4 square feet and 1" deep as approved by the Engineer. The fabric shall be tied to any exposed reinforcing steel or anchored to sound concrete with powder actuated anchors as approved by the Engineer.

Placement of the fresh concrete shall be in the maximum height lifts possible under the circumstances and all freshly placed concrete shall be consolidated during placement with adequately sized and effective vibrators.

Following curing and stripping, the exposed faces of new concrete shall be finished off with the use of the appropriate tools to blend in the physical appearance to the surrounding areas as much as possible.

Previously approved cured patches that shift in color or appearance relative to the adjacent concrete prior to project completion may be rejected.

Patches that are not approved by the Engineer as a match to adjacent concrete shall be removed and replaced in their entirety at the Contractor's expense. Limits of removal shall be as directed by the Engineer and may be extended beyond the original limits of patch.

Cured patches shall be sounded by the Engineer to detect the presence of any hollow spots. Such spots shall be removed and replaced by the Contractor at his own expense until a patch acceptable to the Engineer is in place.

Article 6.01.04 - Method of Measurement: *Add the following:*

Class "S" Concrete shall be measured for payment by the actual volume in cubic feet of concrete placed, and accepted by the Engineer. Welded wire fabric and reinforcing steel will not be measured for payment.

Article 6.01.05 - Basis of Payment:

Class "S" Concrete will be paid for at the contract unit price per cubic feet, complete in place, which price shall include providing inspection access, locating and removing unsound material, saw cutting or chiseling, sandblasting, cleaning, application of Zinc primer on the existing reinforcing steel, welded wire fabric, forming, placing, curing, stripping and finishing new concrete, and all materials, equipment, tools, labor and clean-up incidental thereto.

Pay Item

Class "S" Concrete

Pay Unit

c.f.

ITEM #0601202A – CONCRETE FOR LINK-SLAB

Work under this item shall conform to the pertinent requirements of Section 6.01 supplemented and amended as follows:

Description: is supplemented by the following:

Where indicated in the plans, the Contractor shall furnish and install Concrete for Link-Slab, consisting of an Engineered Cementitious Composite (ECC) for use in Link-slabs for newly constructed bridge, rehabilitated or retrofitted bridges. The concrete shall be composed of Portland cement (Type 1), fine aggregate, poly-vinyl-alcohol fibers, fly ash (type-F), high range water reducer, and water. The use of truck mixed or transit mixed concrete is permitted for Concrete for Link-Slab. The contractor is encouraged to work closely with the Concrete for Link-Slab manufacturer or their technical representative to ensure design criteria are met.

Materials: is supplemented by the following:

Materials for Concrete for Link-Slab shall conform to the requirements of Article M.03.01 amended as follows:

Concrete: The concrete shall consist of a homogeneous mixture of Portland cement (Type 1), fine aggregate, poly-vinyl-alcohol (PVA) fibers, fly ash (type-F), high range water reducer, and water. Fine aggregates used for ECC concrete shall be of virgin silica sand consisting of a gradation curve with 50% particles finer than 0.04 mils and a maximum grain size of 12 mils.

Fiber to be used by ECC concrete shall be manufactured of poly-vinyl-alcohol (PVA) with a fiber diameter of 1.5 mils and a length between 0.3 inch and 0.5 inch. The surface of the fiber shall be oiled by the manufacturer with 1.2% (by weight) hydrophobic oiling compound along the length of the fiber. Fiber strength shall be a minimum of 232 ksi with a tensile elastic modulus of at least 5,800 ksi.

Water Reducing, High Range Admixture: Water reducing, high range admixture (superplasticizer) complying with ASTM C 494, Type F or G, ASTM C 1017, Type 1 or 2. In addition, the selected water reducing-high range admixtures should be comprised of a polycarboxylate chemical composition.

Retarding admixture shall comply with ASTM C 494, Type D and M.03.01.09

Concrete for Link-Slab Mix Design Requirements:

Table 1

Design Parameter	Value
Water (H ₂ O)	544 lb./yd ³
Portland Cement, Type 1	973 lb./yd ³
Fly Ash, Type F	1167 lb./yd ³
Fine Aggregate, Dry	778 lb./yd ³
High Range Water Reducer (HRWR)	14.6 lb./yd ³
Poly-vinyl-alcohol (PVA) Fiber	43.8 lb./yd ³
Retarding Admixture	Optional

Table 2

Minimum Strength of Concrete for Link-Slab Material	7 day	14 day	28 day
Compressive	3200 psi.	4000 psi.	4500 psi.
Tensile (uniaxial)	500 psi.	500 psi.	500 psi.
Ultimate Tensile Stain Capacity	2% (uniaxial tension)		

Trial Batch: The contractor shall appoint a technical representative capable of making adjustments to the batching and mixing of Concrete for Link-Slab material. This representative must be familiar with the mixing, batching and placement of Concrete for Link-Slab material. The technical representative will designate a batching sequence of Concrete for Link-Slab material to ensure uniform fiber dispersion, and homogeneity of the material. The batching sequence must be approved by the Engineer. The technical representative shall be present at the trial batch and at the first placement of Concrete for Link-Slab material to make recommendations and adjustments.

A 4 yd.³ trial batch shall be mixed and placed at the mix plant or as designated by the Engineer a minimum of 28 working days prior to full production. The Engineer must be notified of the time of the trial batch mix, a minimum of 48 hours prior batching. Quality assurance specimens shall be cast from this trial batch according to section 6.01.03 of the standard specifications, and tested by ConnDOT personnel or designated ConnDOT representatives, to validate early age hardened properties of the Concrete for Link-Slab mixture.

The trial batch shall be prepared following the adjusted mix design and with the same materials that will be used in the Concrete for Link-Slab mixture. For the trial batch to be considered successful, workability, fiber dispersion, mixture rheology, 7 and 14 day compressive and tensile

strengths, and uniaxial tensile strain capacity must meet the requirements of this special provision. Workability is evaluated as outlined in previous section of this provision. Qualitative judgment must be made by the Engineer as to proper homogeneous fiber dispersion throughout the fresh material, and acceptable rheology of the mix for the intended application. If the trial batch does not meet these requirements the trial batch shall be repeated at no additional cost to the Department.

Construction Methods:

Construction Method for this work shall conform to the requirements of Article 'Section 6.01.03' | amended as follows:

Trucks delivering ECC material to the project location must be fully discharge within one hour of charging at the plant. Prior to placement of the link-slab, all concrete/ECC interfaces shall be wetted with a uniform spray application of water so that all the surfaces are moist at the time of placement, with no standing water. Water collecting in depression areas of form platform shall be blown out with clean, oil free, compressed air.

The Contractor is advised that due to the high flow-ability of Concrete for Link-Slab material, it may be difficult to place the material on sloped bridge deck. The flow-ability problem may be exacerbated if vibration is present. Special method with phased construction may be needed when vibrations are present during placement of the Concrete for Link-Slab material.

Sidewalk, curb or barrier shall not be cast on the bridge deck until the link-slab has received a minimum of two days continuous wet cure cycles. Heavy equipment is not allowed on the link-slab until the link-slab has reached an age of at least 4 days, and then not until the ECC material has attained the 28 days strength listed in Table 2. The sidewalk, curb and parapet within the link-slab span shall be cast of Concrete for Link-Slab material.

If the workability limits within this special provision cannot be met, or due to other circumstances, the contractor is allowed to use hand held vibration equipment to aid in the placement and consolidation of the Concrete for Link-Slab material if approved by the Engineer. Vibration should be used cautiously to acquire proper consolidation of the Concrete for Link-Slab material, and only as a final measure in guaranteeing high quality construction. Precaution must be taken during vibration to not affect proper dispersion of the fibers within the fresh Concrete for Link-Slab material.

Neoprene Pads: Shall be placed on top of girder flanges, in accordance with the plans.

Method of Measurement: is supplemented with the following:

Concrete for Link-Slab shall be measured for payment by the actual volume in cubic yards of Concrete for Link-Slab, complete and accepted, within the limit shown on the plans or as ordered by the Engineer.

Basis of Payment: is supplemented with the following:

Concrete for Link-Slab: This material will be paid for at the contract unit price per cubic yard for Concrete for Link-Slab, complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto, including heating, all costs associated with the technical representative and all admixtures.

Pay Item

Concrete for Link-Slab

Pay Unit

c.y.

ITEM #0603031A – SPLICING STEEL PLATE GIRDERS (SITE NO. 1)

Description: This work shall consist of installing new girder splices in accordance with the plans.

Work under this item shall also consist of removing sections of the existing girders as required to accept the new girder splices.

Work under this item also consists of constructing, maintaining, and removing a temporary work platform or platforms to support a crane during work operations.

Work under this item also consists of temporarily supporting the hung span during the girder splice replacement.

Materials: Material for the permanent work shall be in accordance with the plans. Materials required for the temporary support system shall be of satisfactory quality, and capable of safely carrying the actual loads. All materials shall be approved by the Engineer before use.

Construction Methods: Wherever arc gouging, flame cutting, or welding will be used, existing lead paint must first be removed as specified in “Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel”.

The Contractor shall prepare and submit to the Engineer working drawings and computations for the temporary support system in accordance with Article 1.05.02. These drawings shall include complete details of the methods, materials and equipment he proposes to use. The drawings shall bear the seal of a Professional Engineer licensed in the state of Connecticut. Work shall not be started until approval from the Engineer has been obtained. Note that the temporary support system shown in the plans is conceptual in nature.

If required, the Contractor shall design and construct a temporary work platform of necessary dimensions to support a crane during the work operations for all required stage construction conditions. The temporary work platform shall be removed after it is no longer needed or as ordered by the Engineer.

Shop drawings, detailing the replacement girder section, shall be prepared and submitted in accordance with Article 1.05.02.

After the temporary support system is in place and the deck concrete has been removed, the existing girder splice shall be cut out and removed in accordance with the plans.

Jacks of sufficient capacity and number shall be used to raise the hung span girder the minimum amount necessary to permit all work as indicated on the plans.

The Contractor, as directed by the Engineer, shall take adequate precautions to prevent any materials from dropping to the area below, which may result in damage to any permanent construction or to adjoining property.

The replacement girder section shall be lowered into position and installed in accordance with the plans. It is recommended to have the replacement section on site prior to removing the existing girder splice so as to minimize problems with thermal movements of the bridge.

Procedures for welding and for the installation of high strength bolts shall conform to applicable provisions of Article 6.03.03.

Only one girder splice shall be replaced at a time.

After the replacement girder splice is installed the temporary support shall then be relocated to the next (adjacent) girder or removed, as required.

Method of Measurement: This item will be measured for payment by the number of girder splices replaced, complete and accepted.

Basis of Payment: This work shall be paid for at the contract unit price each for "Splicing Steel Plate Girders (Site No. 1)", which price shall include the cost of cutting and removing the existing girder splice, furnishing and installing the new girder splice, and all materials, tools, equipment and labor incidental thereto, including the cost of furnishing, installing, and removing the temporary support system, the cost of designing, installing, maintaining, and removing all temporary work platforms required for support of cranes.

The cost of cutting and removing existing steel attached to the girder splice will be paid for under item "Removal of Existing Structural Steel".

ITEM # 0603061A – STRUCTURAL STEEL (SITE NO. 1)

Article 6.03.01 - Description: is supplemented as follows:

Work under this item shall consist of furnishing, fabricating, transporting, storing, handling and installing structural steel including new stiffeners, angles, bolsters, w-shape members and channels for the purpose of strengthening beams, replacing cross frame members and lateral bracing. Also included shall be sole plates and masonry plates, as applicable, for the purpose of replacing expansion and fixed bearings as shown on the plans, as directed by the Engineer and in accordance with these specifications.

This special provision provides additional requirements for the surface preparation, shop painting, and field touch-up painting of new structural steel.

Work under this item shall conform to the requirements of Section 6.03, supplemented and amended as follows:

Article 6.03.02 – Materials: The materials for this work shall conform to the requirements of AASHTO M270, Grade 50T2.

Painting materials for this work shall conform to the following:

- The Contractor shall select a three-coat system from the qualified products Lists A and B issued by the Northeast Protective Coating Committee (NEPCOAT), except System No. SSC(03)-02, comprised of Carbozinc 859 organic zinc rich primer, Carboguard 888 epoxy polyamide, and Carbothatne 133HB aliphatic Polyurethane that shall not be permitted. The approved NEPCOAT listings may be found at the NEPCOAT website at <http://www.maine.gov/mdot/nepcoat/index>. The system chosen shall have a prime coat that has achieved a Class 'B' slip coefficient. Top coat paint color shall be as noted on the plans.
- Both the shop painted and field touchup applied coating systems shall be of the same three-coat system. The same coating material manufacturer shall furnish all materials for the complete coating system. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written instructions.

Article 6.03.03 – Construction Methods: In Subarticle 4 "Field Erection" - part (f) "High Strength Bolted Connections", the following revisions are made:

- Replace the first sentence of the fourth paragraph "Surface Conditions: At the time of...other foreign material" with the following:

At the time of assembly, all connection faying surfaces shall be free of burrs, dirt or other foreign material. Faying surfaces within portions of structural steel

designated to be uncoated shall be free of scale, except tightly adhered mill scale. Connection faying surfaces within portions of structural steel designated to be painted shall receive a single coat of primer in accordance with requirements stipulated elsewhere in this special provision.

- Delete the entire fifth paragraph: “Paint is permitted on...wire brushing is not permitted.”

Following the last paragraph of the article, add the following:

The painting application shall be done in compliance with the following requirements:

Qualification of Shop Painting Firm: All shop painting of structural steel must be performed by and in an enclosed shop that is certified by the SSPC Painting Contractor Certification Program QP-3, entitled “Standard Procedure for Evaluating Qualifications of Shop Painting Contractors” in the enclosed shop category or that holds an AISC Quality Certificate with a “Sophisticated Paint Endorsement” in the enclosed shop category. They shall be fully certified, including endorsements, for the duration of the time they are performing the surface preparation and coating application. A copy of the subject certification shall be provided to the Engineer prior to commencing any surface preparation or coating application.

The complete coating system shall be applied in an enclosed shop except for field touch-up painting which shall be applied after all bolts are fully tensioned and deck formwork removed. The enclosed shop shall be a permanent facility with outside walls to grade and a roof where surface preparation and coating activities are normally conducted in an environment not subject to outdoor weather conditions and/or blowing dust.

Quality Control Inspection of Shop Painting: The firm performing shop painting of the structural steel shall have a written quality control (QC) program. A copy of the QC program and record keeping procedures shall be provided to the Engineer prior to commencing any surface preparation or coating application. The program shall contain, but not be limited to, the following:

1. Qualifications of QC staff.
2. Authority of QC staff. QC staff must have the authority to stop non-conforming work.
3. Procedure for QC staff to advise operation supervisor, in writing, of non-conforming work.
4. Sample copy of QC inspection reports that will document compliance with specification.
5. Procedure for calibrating inspection equipment and recording calibration.
6. Procedure for repairing defective coating applications.

The Contractor or Shop shall provide at least one Quality Control Inspector for the duration of the shop application to provide Quality Control. The QC Inspector must be a National Association of Corrosion Engineers (NACE) Coating Inspector Certificated with Peer Review. The QC Inspector shall verbally inform the Engineer on a daily basis, of the progress and any corrective actions

performed on the coating work. The QC Inspector shall be present during all cleaning and coating operations.

The Contractor or Shop shall be responsible for purchasing and providing the latest version of the NACE Coating Inspector Log Book(s) and all necessary inspection tools. The Contractor's QC Inspector shall stamp the front page of each inspector's log book used during painting operations. The stamped book(s) shall indicate the inspector's NACE certification number, certification expiration date and shall also be signed. All daily coating activity shall be recorded in the Log Book. Copies of the log entries shall be provided on a daily basis to the Department's Quality Assurance (QA) shop representative. Upon completion of the coating, the log book(s) shall then be furnished to the Department's QA shop representative.

Technical Advisor: The Contractor or Shop shall obtain the services of a technical advisor who is employed by the coating manufacturer to assist the Engineer and shop painting firm during this work. The technical advisor shall be a qualified representative and shall be made available at the Shop upon request by the QC Inspector or the Engineer.

Surface Preparation: The following shall be performed prior to abrasive blast cleaning of steel members:

- All corners and edges shall be rounded to a 1/16-inch radius or chamfered to a 1/16-inch chamfer.
- All fins, slivers and tears shall be removed and ground smooth.
- All rough surfaces shall be ground smooth.
- Flame cut edges shall be ground over their entire surface such that any hardened surface layer is removed, and subsequent abrasive blast cleaning produces the specified surface profile depth.

Immediately before abrasive blast cleaning all steel members shall be solvent cleaned in accordance with SSPC-SP1 - "Solvent Cleaning."

Abrasive blast cleaning shall be performed in accordance with SSPC-SP 10 - "Near White Blast Cleaning" using a production line shot and grit blast machine or by air blast. The abrasive working mix shall be maintained such that the final surface profile is within the range specified elsewhere in this specification.

The QC Inspector shall test the abrasive for oil, grease or dirt contamination in accordance with the requirements of ASTM D7393 and document the test results. Contaminated abrasive shall not be used to blast clean steel surfaces. The blast machine shall be cleared of all contaminated abrasive and then solvent cleaned thoroughly in accordance with SSPC-SP 1 "Solvent Cleaning". New uncontaminated abrasive shall be added. Abrasive shall be tested for contaminants in accordance with the requirements of ASTM D7393 prior to the start of blast cleaning operations and at least every four hours during the blast cleaning operations.

All compressed air sources shall have properly sized and designed oil and moisture separators, attached and functional, to allow air at the nozzle, either for blast cleaning, blow-off, painting or breathing, to be oil-free, and moisture-free. They shall have sufficient pressure to accomplish the associated work efficiently and effectively.

The QC Inspector shall perform the blotter test and document the results at the start of each blasting shift and at least every four hours during the blasting operation to ensure that the compressed air is free of oil and moisture. The blotter test shall be performed in accordance with the procedure outlined in ASTM D4285. For contaminated air sources, the oil and moisture separators shall be drained and the air retested.

No surface preparation or coating shall be done when the relative humidity is at or above 80 percent or when the surface temperature of the steel is less than five (5) degrees Fahrenheit above the dewpoint temperature as determined by a surface thermometer and an electric or sling psychrometer.

Surface Profile: The steel surface profile shall be 1 to 3 mils. Each girder or beam shall have the surface profile measured at a minimum of three locations in accordance with the test requirements of ASTM D4417, Method C. Smaller pieces such as diaphragms shall have the surface profile measured at a minimum of three locations on one piece at the beginning of abrasive blast operations and at least every four hours and at the end of abrasive blast cleaning operations. This measurement shall be performed with both coarse (0.8-2.0 mils) and extra coarse (1.5-4.5 mils) replica tape. During this measurement, special attention shall be given to areas that may have been shielded from the blast wheels, such as the corners of stiffeners and connection plates. The impressed tapes shall be filed in the NACE Coating Inspector's Log Book. Note: When measuring the profile on the tape, 2 mils shall be subtracted (non-compressible mylar thickness) from the micrometer reading as indicated on each piece of tape.

A surface profile correction factor shall be measured in accordance with SSPC-PA 2 section 2.2.4 with a "Type 2" magnetic film thickness gage.

Application Methods: The coating system shall be applied by spray equipment of a type and size capable of applying each coat within the required thickness range. The applicator shall strictly adhere to the manufacturer's written recommendations about application methods, cure times, temperature and humidity restrictions and recoat times for each individual coat of the specified system. However, in no case shall coatings be applied in ambient conditions that exceed the relative humidity and dewpoint temperature control limits specified elsewhere within this special provision. Brushes shall be used in areas where spray application will not achieve acceptable results. Brushing technique shall be performed in a manner that will provide a uniform, blended finish.

Conventional spray equipment with mechanical agitators shall be used for prime coat application.

All storage, mixing, thinning, application and curing techniques and methods shall be accomplished in strict accordance with the printed material data sheets and application instructions published by the respective coating material manufacturer.

Surfaces shall be painted with the specified prime coat material before the end of the same work shift that they were blast cleaned and before any visible rust back occurs. Applied coatings shall not have runs, sags, holidays, pinholes or discontinuities.

The dry film thickness shall be within the range specified in the manufacturer's printed literature for the specified coating system. Dry film thickness shall be measured in accordance with SSPC-PA 2. The prime, intermediate and top coats shall be of contrasting colors as determined by the Engineer. There shall be no color variation in the topcoat as determined by comparison with Federal Standard 595.

Areas Requiring Special Treatment: All steel surfaces shall receive the three-coat shop applied system as specified except the following particular area types which shall be treated as follows:

- 1) Faying surfaces of connections shall receive only a single application of primer. The dry film thickness shall be no greater than the thickness tested on the coating manufacturer's Certified Test Report for slip coefficient.
- 2) For the purpose of replacing steel or adding new, strengthening steel to a bridge that is to be fully field painted after the replacement or strengthening steel is erected, new structural steel to be used for those purposes shall receive (at the shop) only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 3) All steel surfaces within four (4) inches of field welds shall receive only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 4) Top surfaces of top flanges that will be in contact with concrete shall receive only a single mist coating of primer at 0.5 - 1.5 mils dry film thickness.
- 5) Edges and shop welds shall be locally hand-striped with a brush in the longitudinal direction with an additional coat of an appropriate zinc-rich primer prior to application of the full intermediate coat. The application of the striping materials shall be in accordance with the coatings manufacturer's written instructions. The striping material shall be a contrasting color to distinguish it from the primer and intermediate coats.
- 6) The interior surfaces of box girders, including bracing, shall be prepared in accordance with these specifications then coated with the first two coats of the three-coat system. The intermediate coat in these areas shall be white and match Federal Standard 595 Color Number 27925.

Adhesion: Adhesion strength of the fully coated assemblies shall be the more restrictive of the manufacturer's specified adhesion strength or at least 600 psi for systems with organic zinc primers and at least 250 psi for systems with inorganic zinc rich primers measured as per ASTM D4541 using apparatus under Annex A4. All adhesion test locations shall be recoated in

accordance with this specification at no additional cost. The QC Inspector shall perform adhesion strength tests every 500 sq. ft. and document the adhesion strength test results.

If adhesion test results are less than the specified value, but equal to or greater than 80% of the specified value, four (4) additional adhesion tests shall be taken within the 500 sq. ft. area of the failed test. If any of the additional adhesion tests are less than the specified value the coating shall be removed from the entire piece and re-applied at the Contractor's expense. The entire coating system shall be removed from a piece if any adhesion tests are less than 80% of the specified value and re-applied at the Contractor's expense.

Smaller pieces such as diaphragms shall be analyzed in lots that have an overall coated surface area of approximately 500 sq. ft.

Protection of Coated Structural Steel: All fully coated and cured assemblies shall be protected from handling and shipping damage with the prudent use of padded slings, dunnage, separators and tie downs. Loading procedures and sequences shall be designed to protect all coated surfaces. Erection marks for field identification of members and weight marks shall be affixed in such a manner as to facilitate removal upon final assembly without damage to the coating system.

Qualification of Field Touchup Painting Contractors: All painting contractors and painting subcontractors used for all field touchup painting must be certified by the SSPC Painting Contractor Certification Program (PCCP), QP-1, entitled "Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures" at the time of field touchup coating application. This certification must be full and not interim. The painting contractors or subcontractors must remain so certified for the duration of the field coating application. If a contractor's or subcontractor's certification expires, the painting firm will not be allowed to perform any work until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply.

Quality Control Inspection of Field Touchup Painting: The contractor performing field touchup painting of the structural steel shall have a written quality control (QC) program. A copy of the QC program and record keeping procedures shall be provided to the Engineer prior to commencing any surface preparation or coating application. The program shall contain, but not be limited to, the following:

1. Qualifications of QC staff.
2. Authority of QC staff. QC staff must have the authority to stop non-conforming work.
3. Procedure for QC staff to advise operation supervisor, in writing, of non-conforming work.
4. Sample copy of QC inspection reports that will document compliance with specification.
5. Procedure for calibrating inspection equipment and recording calibration.
6. Procedure for repairing defective coating applications.

The Contractor shall provide at least one Coating Inspector who is Certificated and peer reviewed with the National Association of Corrosion Engineers (NACE) for the duration of the field application to provide Quality Control. The QC Inspector shall verbally inform the Engineer on a daily basis, of the progress and any corrective actions performed on the coating work. The QC Inspector shall be present during all cleaning and coating operations.

The Contractor shall be responsible for purchasing and providing the latest version of the NACE Coating Inspector Log Book(s) and all necessary inspection tools. The Contractor's QC Inspector shall stamp the front page of each inspector's log book used during painting operations. The stamped book(s) shall indicate the inspector's NACE certification number, certification expiration date and shall also be signed. All daily coating activity shall be recorded in the Log Book. Copies of the log entries shall be provided on a daily basis to the Department's Quality Assurance (QA) field representative. Upon completion of the coating, the log book(s) shall then be furnished to the Department's QA field representative.

Field Touch-Up Painting of Shop applied coating: The field applied coating for touchup painting shall be the same system used in the shop applied application. Field application of coatings shall be in accordance with the manufacturer's written application guidelines and these specifications. All areas cleaned to bare metal must be coated with zinc-rich primer before any visible rusting occurs. The intermediate and topcoat material for field touch-up painting shall be from the same lot and batch used in the shop provided its shelf life has not expired. If the shelf life has expired, the same material of the same color from a different lot and batch shall be used.

After all concrete is placed and the forms are removed, all rust, scale, dirt, grease, concrete splatter and other foreign material shall be completely removed from all painted surfaces. All surfaces to be field painted shall also be cleaned by solvent cleaning in accordance with SSPC-SP 1, hand tool cleaning SSPC-SP 2, and power tool cleaning SSPC-SP 3 and SSPC-SP 11. Areas cleaned to SSPC-SP 11 must have a 1-3 mil profile and must be primed prior to rusting. All debris generated from cleaning operations must be contained and properly disposed of by the Contractor.

Bolts, nuts, washers and surrounding areas shall receive brush applications of intermediate and topcoat after final tensioning. Careful attention shall be given to bolted connections to insure that all bolts, nuts and washers are fully coated and that no gaps are left unfilled and uncoated.

Field welds and surrounding areas shall be treated in the same manner as shop welded areas, including special treatment requirements.

Damage to the coating system that extends to the steel surface (such as scratches, gouges or nicks), shall have the entire three-coat system locally reapplied after power tool cleaning to bare metal in accordance with SSPC-SP 11. The coating system adjacent to the damage shall be feathered back to increase the surface area for touch up painting. The area cleaned to SSPC-SP 11 shall be primed with a zinc-rich primer before rusting occurs.

Damage to the coating system that extends back only to the prime or intermediate coat, shall only have the topcoat applied. Application of the touch-up materials in these damaged areas shall be performed by brush only.

General: The word “PAINTED”, followed by the month and year the painting of the structure is completed along with the ConnDOT Project Number and the manufacturer's abbreviations for each of the three coats, shall be stenciled on the inside of a fascia girder at mid-depth of the girder in three (3) inch high block letters located near the abutment, so as to be clearly visible from the ground below. Paint for stenciling information shall be of a contrasting color and be compatible with the topcoat.

Article 6.03.04 – Method of Measurement: This work will be paid for at the contract lump sum price for “Structural Steel (Site No.).” No measurements will be made for payment.

Article 6.03.05 – Basis of Payment: This work will be paid for at the contract lump sum price for “Structural Steel (Site No.),” completed and accepted, which price shall include, furnishing, painting, transporting, storing, erecting and installing the new stiffeners, angles, bolsters, w-shaped members and channels, fixed and expansion sole plates and masonry plates, as applicable, all welding and weld inspection, and all other materials, equipment, tools, labor and work incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Structural Steel (Site No.)	l.s.

ITEM #0603870A – REMOVAL OF EXISTING STRUCTURAL STEEL

Description: This item shall consist of removing structural steel in accordance with the plans and as directed by the Engineer. The structural steel to be removed consists of lateral bracing (I sections), end bearing diaphragms (channel sections), cross framing (constructed from angle irons), connection plates (welded to girder webs), channels supporting the old drainage system and steel removed around new girder splices.

Materials: None required under this item

Construction Methods: Wherever arc gouging, flame cutting, or welding will be used, existing lead paint must first be removed as specified in “Item #0603729A – Localized Paint Removal and Field Painting of Existing Steel”.

Structural steel, where called for in the plans, shall be cut out and removed.

Removal of weld material shall be done by machining, grinding, chipping, or air carbon-arc gouging and in such a manner that the remaining base metal is not wicked or undercut. A minimum of 1/8” of weld metal shall be left in place if arc gouging is the selected removal method and the remaining weld metal shall be removed by grinding. Welders who perform arc gouging shall be SMAW certified.

Method of Measurement: This work will not be measured for payment.

Basis of Payment: This work will be paid for at the contract lump sum price for "Removal of Existing Structural Steel", which price shall include all materials, equipment, tools and labor incidental thereto, including the cost of localized paint removal.



General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (non-electronic form)

Prior to completing this form, you **must** read the instructions for the subject general permit available at [DEEP-WPED-INST-015](#).

This form must be filled out electronically before being printed.

You must submit the registration fee along with this form.

The [status of your registration](#) can be checked on the DEEP's ezFile Portal. Please note that DEEP will no longer mail certificates of registration.

CPPU USE ONLY

App #: _____

Doc #: _____

Check #: _____

Program: Stormwater

Part I: Registration Type

Select the appropriate boxes identifying the registration type and registration deadline.

Registration Type		Registration Timeline		
<input checked="" type="checkbox"/>	New Registration (Refer to Section 2 of the permit for definitions of Locally Exempt and Locally Approvable Projects)	<input type="checkbox"/> Locally Approvable Projects Size of soil disturbance:	New registration - Sixty (60) days prior to the initiation of the construction activity for: Sites with a total soil disturbance area of 5 or more acres	
		<input checked="" type="checkbox"/> Locally Exempt Projects Size of soil disturbance: 1.22	<input checked="" type="checkbox"/>	New registration - Sixty (60) days prior to the initiation of the construction activity for: Sites with a total disturbance area of one (1) to twenty (20) acres except those with discharges to impaired waters or tidal wetlands
			<input type="checkbox"/>	New registration - Ninety (90) days prior to the initiation of the construction activity for: (i) Sites with a total soil disturbance area greater than twenty (20) acres, or (ii) Sites discharging to a tidal wetland (that is not fresh-tidal and is located within 500 feet), or (iii) Sites discharging to an impaired water listed in the "Impaired Waters Table for Construction Stormwater Discharges"

Part II: Fee Information

1. New Registrations

a. Locally approvable projects (registration only):

☐ \$625 [#1855]

b. Locally exempt projects (registration and Plan):

☒ \$3,000 total soil disturbance area \geq one (1) and < twenty (20) acres. [#1856]

☐ \$4,000 total soil disturbance \geq twenty (20) acres and < fifty (50) acres. [#1857]

☐ \$5,000 total soil disturbance \geq fifty (50) acres. [#1858]

The fees for municipalities shall be half of those indicated in subsections 1.a., 1.b., and 2 above pursuant to section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection. The registration will not be processed without the fee. The fee shall be non-refundable and shall be paid by certified check or money order payable to the Department of Energy and Environmental Protection.

Part III: Registrant Information

- If a registrant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of the State. If applicable, the registrant's name shall be stated **exactly** as it is registered with the Secretary of the State. This information can be accessed at [CONCORD](#).
- If a registrant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1. Registrant /Client Name: Kenneth E. Fagnoli, P.E., District 4 Engineer

State Agency ↓

Secretary of the State business ID #:

Mailing Address: 359 South Main Street

City/Town: Thomaston

State: CT

Zip Code: 06787

Business Phone: 203-591-3540

ext.:

Example:(xxx) xxx-xxxx

Contact Person: Kenneth E. Fagnoli, P.E. Title: District Eng

E-Mail: **Kenneth.Fagnoli@ct.gov**

Additional Phone Number (if applicable):

ext.

2. List billing contact, if different than the registrant:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Contact Person:

Title:

Part III: Registrant Information (continued)

3. List primary contact for departmental correspondence and inquiries, if different than the registrant:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Site Phone:

Emergency Phone:

Contact Person:

Title:

Association (e.g. developer, general or site contractor, etc.):

4. List owner of the property on which the activity will take place, if different from registrant:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Contact Person:

5. List developer, if different from registrant or primary contact:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Contact Person:

Title:

6. List general contractor, if different from registrant or primary contact:

Name:

Mailing Address:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Site Phone:

Off Hours Phone:

Contact Person:

Title:

7. List any engineer(s) or other consultant(s) employed or retained to assist in preparing the registration and/or Stormwater Pollution Control Plan. ☐ Please select if additional sheets are necessary, and label and attach them to this sheet.

Name: Joseph Arsenault

Mailing Address: P.O. Box 317546

City/Town: Newington

State: CT

Zip Code: 06131

Business Phone: 860-594-3471

ext.:

Contact Person: Joseph Arsenault

Title: Project Engineer

Service Provided: **Preperation of Stormwater Application and Plans**

Email: Joseph.D.Arsenault@ct.gov

8. List Reviewing Qualified Professional (for locally approvable projects only). This information must match the information provided in Part IX of this registration.

Name:

Contact Person:

Mailing Address:

Email:

City/Town:

State:

Zip Code:

Business Phone:

ext.:

Part IV: Site Information

1. Site Name: Rehabilitation of Bridge No. 00608, Rt 8 NB Over the Naugatuck River and RR
Street Address or Description of Location: Bridge 00608, Route 8 NB over Naugatuck River
(if linear, project location should be the project beginning point)
City/Town: Litchfield/Harwinton State: CT Zip Code: 06759
(use only one zip code)
Longitude: -7 3.1 1 0 6 9 Latitude: 4 1.7 3 8 9 2
Brief Description of construction activity: Bridge Rehabilitation
Project Start Date (must be on or after the authorization date of this registration) : 08 / 2015
Anticipated Completion Date: 10 / 2017 month/ yr)
(month/ yr)
Normal working hours: 0730 to 1600

2. MINING: Is the activity on the site in question part of mining operations (i.e. sand and gravel)? ☐ Yes ☒ No
If yes, mining is not authorized by this general permit. You must submit the Registration Form for the General Permit for the Discharge of Stormwater Associated with Industrial Activity.
3. COMBINED OR SANITARY SEWER: Does all of the stormwater from the proposed activity discharge to a combined or sanitary sewer (i.e. a sewage treatment plant)? ☐ Yes ☒ No
If yes, this activity is not regulated by this permit. Contact the Water Permitting & Enforcement Division at 860-424-3018.
4. INDIAN LANDS: Is or will the facility be located on federally recognized Indian lands ☐ Yes ☒ No
5. COASTAL BOUNDARY: Is the activity which is the subject of this registration located within the coastal boundary as delineated on DEEP approved coastal boundary maps ☐ Yes ☒ No
The coastal boundaries fall within the following towns: Branford, Bridgeport, Chester, Clinton, Darien, Deep River, East Haven, East Lyme, Essex, Fairfield, Greenwich, Groton (City and Town), Old Lyme, Guilford, Hamden, Ledyard, Lyme, Madison, Milford, Montville, New London, New Haven, North Haven, Norwalk, Norwich, Old Saybrook, Orange, Preston, Shelton, Stamford, Stonington (Borough and Town), Stratford, Waterford, West Haven, Westbrook and Westport.
If "yes", and this registration is for a new authorization or a modification of an existing authorization where the physical footprint of the subject activity is modified, you must provide documentation the DEEP Office of Long Island Sound Programs or the local governing authority has issued a coastal site plan approval or determined the project is exempt from coastal site plan review. Provide this documentation with your registration as Attachment B. See guidance in Appendix D of the general permit. Information on the coastal boundary is available at the local town hall or at www.cteco.uconn.edu/map_catalog.asp. Additional DEEP Maps and Publications are available by contacting DEEP staff at 860-424-3555.

Part IV: Site Information (continued)

6. ENDANGERED OR THREATENED SPECIES:

In order to be eligible to register for this General Permit, each registrant must perform a self-assessment, obtain a limited one-year determination, or obtain a safe-harbor determination regarding threatened and endangered species. This may include the need to develop and implement a mitigation plan. While each alternative has different limitations, the alternatives are not mutually exclusive; a registrant may register for this General Permit using more than one alternative. See Appendix A of the General Permit. Each registrant must complete this section AND Attachment C to this Registration form and a registrant who does not or cannot do so is not eligible to register under this General Permit.

Each registrant must perform a review of the Department's Natural Diversity Database maps to determine if the site of the construction activity is located within or in proximity (within ¼ mile) to a shaded area.

- a. Verify that I have completed Attachment C to this Registration Form. ☒ Yes
- b. Provide the date the NDDDB maps were reviewed: April 24, 2015 Date of map should be **one** year or less than the submittal date of this application. Print a copy of the NDDDB map you viewed since it must be submitted with this registration as part of Attachment C.
- c. For a registrant using a limited one-year determination or safe harbor determination to register for this General Permit, provide the Department's Wildlife Division NDDDB identification number for any such determination: NDDDB20150863 (The number is on the determination issued by the Department's Wildlife Division).

For more information on threatened and endangered species requirements, refer to Appendix A and Section 3(b)(2) of this General Permit, visit the DEEP website at www.ct.gov/deep/nddbrequest or call the NDDDB at 860-424-3011.

7. WILD AND SCENIC RIVERS: Is the proposed project within the watershed of a designated Wild and Scenic River? (See Appendix H for guidance) ☐ Yes ☒ No
8. AQUIFER PROTECTION AREAS: Is the site located within a mapped aquifer protection area www.ct.gov/deep/aquiferprotection as defined in section 22a-354h of the CT General Statutes? (For additional guidance, please refer to Appendix C of the General Permit) ☐ Yes ☒ No
9. CT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL: Is the activity in accordance with CT Guidelines for Erosion and Sediment Control and local erosion & sediment control ordinances, where applicable? ☒ Yes ☐ No
10. HISTORIC AND/OR ARCHAEOLOGICAL RESOURCES:
Verify that the site of the proposed activity been reviewed (using the process outlined in Appendix G of this permit) for historic and/or archaeological resources: ☒ Yes
- a. The review indicates the proposed site does not have the potential for historic/ archaeological resources, OR ☒ Yes ☐ No
- b. The review indicated historic and/ or archaeological resource potential exists and the proposed activity is being or has been reviewed by the Offices of Culture and Tourism, OR ☐ Yes ☐ No
- c. The proposed activity has been reviewed and authorized under an Army Corps of Engineers Section 404 wetland permit. ☐ Yes ☐ No
11. CONSERVATION OR PRESERVATION RESTRICTION:
Is the property subject to a conservation or preservation restriction? ☐ Yes ☒ No

If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying that this registration is in compliance with the terms of the restriction, must be submitted as Attachment D.

Part V: Stormwater Discharge Information

Table 1						
Outfall #	a) Type	b) Pipe Material	c) Pipe Size	d) Note: To find lat/long, go to: CT ECO . A decimal format is required here. Directions on how to use CT ECO to find lat./long. and conversions can be found in Part V, Section d of the DEEP-WPED-INST-015 .		e) What method was used to obtain your latitude/longitude information?
				Longitude	Latitude	
EO_49	pipe	metal	36"	-7 3.1 0 7 1 2	4 1.7 3 2 3 5	CT ECO
EO_12	pipe	concrete	24"	-7 3.1 0 9 6 3	4 1.7 3 7 5 2	CT ECO
EO_35	pipe	metal	18"	-7 3.1 1 2 7 8	4 1.7 4 0 8 9	CT ECO
EO_41	pipe	metal	18"	-7 3.1 1 2 7 8	4 1.7 4 0 8 9	CT ECO
	Select One:	Select One:	Select One:	- .	.	Select One:

Table 2						
Outfall #	a) For temporary and permanent outfalls, provide a start date. For temporary discharges, also provide a date the discharge will cease.	b) For the drainage area associated with each outfall: Effective Impervious Area Before Construction	c) For the drainage area associated with each outfall: Effective Impervious Area After Construction	d) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select "storm sewer or wetland" proceed to Part VI of the form. If you select "waterbody" proceed to next question)	e) For each outfall, does it discharge to any of the following towns: <i>Branford, Kent, Manchester, Meriden, North Branford, Norwalk, or Wilton?</i> (If no, proceed to Part VI of the form. If yes, proceed to next question.)	f) For each outfall, does it discharge to a "freshwater" or "salt water" ? (If you select "freshwater" proceed to Table 3. If you selected "salt water", proceed to Part VI of the form.)
EO-49	8-31-mm/dd-mm/dd	103,846 sq feet	103,846 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Select one:
EO-12	8-31-mm/dd-mm/dd	135,819 sq feet	135,819 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Select one:
EO-35	8-31-mm/dd-mm/dd	13,504 sq feet	13,504 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Select one:
EO-41	8-31-mm/dd-mm/dd	87,318 sq feet	87,318 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Select one:
	- mm/dd-mm/dd	sq feet	sq feet	Select one:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
		340,487 total sq feet	340,487 total sq feet			

Part V: Stormwater Discharge Information

Table 1

Outfall #	a) Type	b) Pipe Material	c) Pipe Size	d) Note: To find lat/long, go to: CT ECO . A decimal format is required here. Directions on how to use CT ECO to find lat./long. and conversions can be found in Part V, Section d of the DEEP-WPED-INST-015 .		e) What method was used to obtain your latitude/longitude information?
				Longitude	Latitude	
EO_30	pipe	concrete	15"	-7 3.1 1 1 3 0	4 1.7 3 9 6 4	CT ECO
EO_31	pipe	metal	15"	-7 3.1 1 1 6 7	4 1.7 4 0 3 5	CT ECO
EO_33	pipe	metal	15"	-7 3.1 1 1 6 1	4 1.7 4 0 1 3	CT ECO
	Select One:	Select One:	Select One:	- .	.	Select One:
	Select One:	Select One:	Select One:	- .	.	Select One:

Table 2

Outfall #	a) For temporary and permanent outfalls, provide a start date. For temporary discharges, also provide a date the discharge will cease.	b) For the drainage area associated with each outfall: Effective Impervious Area Before Construction	c) For the drainage area associated with each outfall: Effective Impervious Area After Construction	d) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select "storm sewer or wetland" proceed to Part VI of the form. If you select "waterbody" proceed to next question)	e) For each outfall, does it discharge to any of the following towns: <i>Branford, Kent, Manchester, Meriden, North Branford, Norwalk, or Wilton?</i> (If no, proceed to Part VI of the form. If yes, proceed to next question.)	f) For each outfall, does it discharge to a "freshwater" or "salt water" ? (If you select "freshwater" proceed to Table 3. If you selected "salt water", proceed to Part VI of the form.)
EO-30	8-31-mm/dd-mm/dd	8,499 sq feet	5,277 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
EO-31	8-31-mm/dd-mm/dd	6,862 sq feet	6,862 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
EO-33	8-31-mm/dd-mm/dd	10,097 sq feet	10,097 sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
	- mm/dd-mm/dd	sq feet	sq feet	storm sewer or wetland	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
	- mm/dd-mm/dd	sq feet	sq feet	Select one:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Select one:
		24,458 total sq feet	22,236 total sq feet			

Part V: Stormwater Discharge Information (continued)

Table 3 Provide the following information about the receiving water(s)/wetland(s) that receive stormwater runoff from your site:			
Outfall #	a) What is your 305b ID # (water body ID #)? (Section 3.b, of the DEEP-WPED-INST-015 , explains how to find this information)	b) Is your receiving water identified as a impaired water in the " Impaired Waters Table for Construction Stormwater Discharges "? If yes, proceed to next question. If no, proceed to Part VI: Pollution Control Plan.	c) Has any Total Maximum Daily Load (TMDL) been approved for the impaired water?
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<input type="text"/>	<input type="text"/>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N

Part V: Stormwater Discharge Information (continued)

Impaired waters: If you answered "yes" to Table 3, question b., **verify** that the project's Pollution Control Plan (Plan) addresses the control measures below in Question 1 or 2, as appropriate.

1. If the impaired water does not have a TMDL, confirm compliance by selecting 1.a. or 1.b. below:

a. No more than 3 acres is disturbed at any time; ☐ Yes

OR

b. Stormwater runoff from a 2 yr, 24 rain event is **retained**. ☐ Yes

2. If the impaired water has a TMDL, confirm compliance by selecting 2.a. and 2.b. below and either question 2.c.1. or 2.c.2. below:

a. The Plan documents there is sufficient remaining Waste Load Allocations (WLA) in the TMDL for the proposed discharge, ☐ Yes

AND

b. Control measures shall be implemented to assure the WLA will not be exceeded, ☐ Yes

AND

c. 1. Stormwater discharges will be monitored for the indicator pollutant identified in the TMDL, ☐ Yes

OR

2. The Plan documents specific requirements for stormwater discharges specified in the TMDL. ☐ Yes

Part VI: Pollution Control Plan (select one of the following three categories)

☒ I am registering a Locally Exempt project and submitting the required electronic Plan (in Adobe™ PDF or similar publically available format) pursuant to Section 3(c)(2)(E) of this permit. (If you do not have the capability to submit the Plan electronically please call 860-418-5982).

☒ Plan is attached to this registration form

☐ Plan is available at the following Internet Address (URL):

☐ I am registering a Locally Approvable project and have chosen not to submit the Plan with this registration pursuant to Section 3(c)(1) of this permit.

☐ I am registering a Locally Approvable project and have chosen to make my Plan electronically available pursuant to Section 4(c)(2)(N) of this permit.

☐ Plan is attached to this registration form

☐ Plan is available at the following Internet Address (URL):

Part VII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

For New Registrants:

" I hereby certify that I am making this certification in connection with a registration under such general permit,
[INSERT NAME OF REGISTRANT BELOW]

submitted to the commissioner by Kenneth E. Fagnoli, P.E. for

[INSERT ADDRESS OF PROJECT OR ACTIVITY BELOW]

an activity located at Route 8 Northbound over the Naugatuck River and Railroad and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(b)(8)(B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

For Re-registrants:

" I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner
[INSERT NAME OF REGISTRANT BELOW]

by [REDACTED] for an activity located at
[INSERT ADDRESS OF PROJECT OR ACTIVITY BELOW]

[REDACTED] and that all terms and conditions of the general permit are being met for all discharges which have been initiated and such activity is eligible for authorization under such permit. I further certify that all designs and plans for such activity meet the current terms and conditions of the general permit in accordance with Section 5(b)(5)(C) of such general permit and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit is on complete and accurate forms as prescribed by the commissioner without alteration of their text. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

Signature of Registrant (Must be an original signature, not a copy or fax)	Date
Kenneth E. Fagnoli P.E.	District Engineer
Name of Registrant (print or type)	Title (if applicable)
Signature of Preparer (if different than above) (Must be an original signature, not a copy or fax)	Date
Joseph D. Arsenault	Project Engineer
Name of Preparer (print or type)	Title (if applicable)

Part VIII: Professional Engineer (or Landscape Architect, where appropriate) Design Certification
(for publically approvable and exempt projects)

The following certification must be signed by a Professional Engineer or Landscape Architect where appropriate.

<p>"I hereby certify that I am a <input style="width: 150px;" type="text"/> choose qualification licensed in the State of Connecticut. I am making this certification in connection with a registration under such general permit, submitted to the commissioner by [INSERT NAME OF REGISTRANT BELOW]</p> <p><input style="width: 500px;" type="text"/> Kenneth E. Fagnoli, P.E. for an activity located at [INSERT ADDRESS OF PROJECT OR ACTIVITY BELOW]</p> <p><input style="width: 700px;" type="text"/> Route 8 Northbound over the Naugatuck River and Railroad</p> <p>I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the project or activity covered by this certification. I further certify, based on such review and on the standard of care for such projects, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, the Stormwater Quality Manual, as amended, and the conditions of the general permit, and that the controls required for such Plan are appropriate for the site. I further certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate, and complete to the best of my knowledge and belief. I also understand that knowingly making any false statement in this certification may subject me to sanction by the Department and/or be punishable as a criminal offense, including the possibility of fine and imprisonment, under section 53a-157b of the Connecticut General Statutes and any other applicable law."</p>	
Signature of Design Professional <small>(Must be an original signature, not a copy or fax)</small>	Date
Name of Professional (print or type)	Title
Mailing Address	City/Town
State	Business Phone
	License #
Affix P.E./L.A Stamp Here	

Part IX: Reviewing Qualified Professional Certification

The following certification must be signed by a) a Conservation District reviewer OR, b) a qualified soil erosion and sediment control and/or professional engineer

☐ **Review certification by Conservation District:**

1.) District: list of districts

Date of Affirmative Determination:

"I am making this certification in connection with a registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner

[INSERT NAME OF REGISTRANT BELOW]

by

[INSERT ADDRESS OF PROJECT OR ACTIVITY BELOW]

I have personally examined and am familiar with the information that provides the basis for this certification, and I affirm, based on the review described in Section 3(b)(11)(C) of this general permit and on the standard of care for such projects, that the Stormwater Pollution Control Plan is adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and that all stormwater management systems: (i) have been designed to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable and that conform to those in the Guidelines and the Stormwater Quality Manual; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution."

Signature of District Professional and Date (Must be an original signature, not a copy or fax)

Name of District Professional and License Number (if applicable)

Or

☐ **Review certification by Qualified Professional**

Company: _____

Name: _____

License # : _____

Level of independency of professional:

Required for all projects disturbing over 1 acre:

1. I verify I am not an employee of the registrant. ☐ Yes
2. I verify I have no ownership interest of any kind in the project for which the registration is being submitted. ☐ Yes

Required for projects with 15 or more acres of site disturbance (in addition to questions 1&2):

3. I verify I did not engage in any activities associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant. ☐ Yes
4. I verify I am not under the same employ as any person associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management systems plan for this registrant. ☐ Yes

Part IX: Reviewing Qualified Professional Certification (continued)

"I hereby certify that I am a qualified professional engineer or qualified soil erosion and sediment control professional, or both, as defined in the General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and as further specified in Sections 3(b)(11)(A) and (B) of such general permit. I am making this certification in connection with a registration under such general permit,

[INSERT NAME OF REGISTRANT BELOW]

submitted to the commissioner by

[INSERT ADDRESS OF PROJECT OR ACTIVITY BELOW]

for an activity located at

I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(b)(11)(C) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I further certify that I have made the affirmative determination in accordance with Sections 3(b)(11)(D)(i) and (ii) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and any other applicable law."

Signature of Reviewing Qualified Professional
(Must be an original signature, not a copy or fax)

Date: _____

Name of Reviewing Qualified Professional

License No.: _____

Affix P.E./L.A. Stamp Here

Part X: Supporting Documents

Select the applicable box below for each attachment being submitted with this registration form. When submitting any supporting documents, please label the documents as indicated below (e.g., Attachment A, etc.) and be sure to include the registrant's name as indicated on this certification form.

- ☒ **Attachment A:** Select here as verification that an 8 ½" X 11" copy of the relevant portion of a USGS Quadrangle Map with a scale of 1:24,000, showing the exact location of the facility has been submitted with this registration. Indicate the quadrangle name on the map, and be sure to include the registrant's name. (To obtain a copy of the relevant USGS Quadrangle Map, call your town hall or DEEP Maps and Publications Sales at 860-424-3555)
- ☐ **Attachment B:** Documentation related to *Coastal Consistency Review*, if applicable.
- ☒ **Attachment C:** Threatened and Endangered Species Form and any additional information (such as a copy of a NDDB map)
- ☐ **Attachment D:** Conservation or Preservation Restriction Information, if applicable.
- ☒ **Attachment E:** Where applicable, non-electronic Pollution Control Plan.

Note: Please submit the fee along with a completed, printed and signed Registration Form and all additional supporting documents to:

**CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127**

Attachment A – USGS Quadrangle Map



PROJECT LOCATION

(TORRINGTON)

(BURLINGTON)

(BURLINGTON)

(BURLINGTON)

(BURLINGTON)

(BURLINGTON)

(BURLINGTON)

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(BURLINGTON)

(BURLINGTON)

(BURLINGTON)

SCALE 1:24,000

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

To place on the predicted North American Datum 1983,
move the projection lines 5 meters south and
37 meters west as shown by dashed corner ticks

THOMASTON, CONN.

41073-F1-TF-024
PHOTOINSPECTED 1976

1966
PHOTOREVISED 1969
DMA 6367 II NE-SERIES 918

Map of the Thomaston Quadrangle, Connecticut, showing terrain, roads, and place names. A black rectangle labeled 'PROJECT LOCATION' is in the upper left. The map includes towns like Torrington, Litchfield, Thomaston, and Plymouth. It features contour lines, water bodies, and a grid system with coordinates 73°07'30" and 41°37'30".

ATTACHMENT C: THREATENED AND ENDANGERED SPECIES

Information about compliance with the requirements of Section 3(b)(2) of this general permit, regarding threatened and endangered species, is in Appendix A of the general permit. Choose one or more (if applicable) of the following in order to be eligible to register for this General Permit. A registrant who does not or cannot do so is not eligible to register under this General Permit.

☐ Self Assessment using the NDDDB maps – Select this only if:

- a. The site of the construction activity is not entirely, partially or within a ¼ mile of a shaded area depicted on the Department's Natural Diversity Database maps and this determination was made not more than six months before the date of submitting this registration;

AND

- b. The entity registering for this General Permit has no reasonably available verifiable scientific, or other credible information that the construction activity could reasonably be expected to have an adverse impact upon a federal or state species listed as threatened or endangered.

Attach a copy of the NDDDB map used to conduct the self assessment used to register for this general permit.

Note: Both a and b as used in this section, must be true in order for a Registrant to register for this General Permit using the self-assessment option. If neither is true, a Registrant cannot use the self-assessment option to comply with Section 3(b)(2) and Appendix A of the General Permit.

☒ Limited One-Year Determination – Select this only if:

- a. The entity registering for this General Permit has obtained a limited one-year determination from the Department's Wildlife Division regarding threatened and endangered species: i) within a year of the date of submitting this registration; or ii) more than 1 year before submitting this registration, but such determination has been extended by the Department within one year of the date of submitting this registration;

AND

- b. The Registrant has provided to the Department's Wildlife Division any reasonably available verifiable scientific, or other credible information that the construction activity could reasonably be expected to have an adverse impact upon a federal or state species listed as threatened or endangered.

Provide the date the limited one-year determination was issued by the Department's Wildlife Division _____;

or

Provide the date that the most recent extension to a limited one year determination was issued by the Department's Wildlife Division April 24, 2015.

Note: Both a and b as used in this section, must be true in order for a Registrant to register for this General Permit using the Limited One-Year Determination option. If a Limited One-Year Determination or extension to any such determination was issued by the Department's Wildlife Division more than one year before the submission of this registration, a Registrant cannot use any such determination or extension to comply with Section 3(b)(2) and Appendix A of the General Permit.

ATTACHMENT C: THREATENED AND ENDANGERED SPECIES (continued)

- ☐ **Select here if the Limited One-Year Determination issued by the Department includes a Mitigation Plan.**

Provide the date the Mitigation Plan was approved: _____

Governmental Entity Approving the Plan: _____

As of the date this Registration is submitted,

Has the Mitigation Plan been fully implemented? ☐ Yes ☐ No

Date commenced: _____ Date completed: _____

Is the Mitigation Plan partially implemented? ☐ Yes ☐ No

If yes, what actions have been taken? _____

And which actions are yet to be implemented and what is the timeframe for completion of such actions: _____

Is the Mitigation Plan yet to be implemented? ☐ Yes ☐ No

If yes, specify the timeframe for implementation: _____ to _____

And summarize actions to be implemented: _____

- ☐ **Safe Harbor Determination - Select this only if:**

- a. The entity registering for this General Permit has obtained a Safe Harbor Determination from the Department's Wildlife Division regarding threatened and endangered species: i) within 3 years of the date of submitting this registration; or ii) more than 3 years before submitting this registration, but within one-year of a one-year extension issued by the Department's Wildlife Division to a safe harbor determination;

AND

- b. The entity registering for this General Permit has provided to the Department's Wildlife Division any reasonably available verifiable scientific, or other credible information that the construction activity could reasonably be expected to have an adverse impact upon a federal or state species listed as threatened or endangered.

Provide the date the Department's Wildlife Division issued a Safe Harbor Determination: _____

If applicable, provide the date that any one-year extension to a Safe Harbor Determination was issued by the Department's Wildlife Division: _____.

Note: Both a and b as used in this section, must be true in order for a Registrant to register for this General Permit using the Safe Harbor Determination option. If a Safe Harbor Determination was issued by the Department's Wildlife Division more than three years before the submission of this registration, and has not been extended, a Registrant cannot use any such safe harbor to comply with section 3(b)(2) and Appendix A of this General Permit. If a Safe Harbor Determination was granted and extended for one-year, more than four years before the submission of this registration, a Registrant cannot use any such Safe Harbor Determination to comply with Section 3(b)(2) and Appendix A of the general permit.

ATTACHMENT C: THREATENED AND ENDANGERED SPECIES (continued)

- ☐ **Select here if the safe harbor noted above includes a Mitigation Plan.**

Provide the date the Mitigation Plan was approved: _____

Governmental Entity Approving the Plan: _____

As of the date this Registration is submitted,

Has the Mitigation Plan been fully implemented? ☐ Yes ☐ No

Date commenced: _____ Date completed: _____

Is the Mitigation Plan partially implemented? ☐ Yes ☐ No

If yes, what actions have been taken? _____

And which actions are yet to be implemented and what is the timeframe for completion of such actions: _____

Is the Mitigation Plan yet to be implemented? ☐ Yes ☐ No

If yes, specify the timeframe for implementation: _____ to _____

And summarize actions to be implemented: _____



Connecticut Department of

**ENERGY &
ENVIRONMENTAL
PROTECTION**

April 24, 2015

Christine Tedford
CT DOT
2800 Berlin Turnpike
Newington, CT 06111

Re: CTDOT 73-182-Bridge No. 00608 Route 8 Northbound over Naugatuck River in Harwinton/Litchfield, Connecticut
NDDB 201500863

Dear Ms. Tedford:

Materials pertaining to the above project were forwarded to me for review by the DEEP Natural Diversity Database (NDDB). According to our records, the State Threatened American rubyspot damselfly (*Hetaerina americana*) occurs in this stretch of the Naugatuck River.

The American rubyspot damselfly utilizes sunny riverbanks with plants or grasses along the banks or on emergent rocks in the river. Alteration or manipulation of riverine and associated wetland habitats may affect this species. Use of riprap on river banks is problematic for this species since it eliminates the vegetated slopes this species prefers.

From the project description you provided, the bridge abutments require minimal repair and that no access of the substructure by heavy equipment that results in soil disturbance is permitted. Additionally, you note that a debris shield will be utilized to minimize the amount of debris falling into the river. No riprap or riverbank disturbance is described as being needed for this project.

To minimize potential impacts to this state-listed damselfly we recommend:

- no vehicles or machinery should be parked on riverbanks;
- no equipment or materials should be staged on river banks;
- best management practices for minimizing sedimentation and erosion into wetlands and watercourses should be utilized and maintained during construction;
- materials used for sediment and erosion control should NOT contain plastic netting/mesh. Products that have plastic mesh embedded in them have been documented to entangle reptiles, amphibians and even birds. Entanglements such as this lead to mortality. Additionally, plastic products that claim to be "degradable" or "biodegradable" have varying decomposition rates and continue to present entanglement hazards for many years after degrading. Any silt fencing or other erosion controls used for this project should be removed as soon as soils are stable to avoid impeding amphibian and reptile movements between wetlands and uplands.

Natural Diversity Database information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Database should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Database as it becomes available.

This determination is valid for one year. Please submit an updated NDDDB Request for Review if the scope of the proposed work changes or if work has not begun by April 24, 2016.

If you have any additional questions, please feel free to contact me at Laura.Saucier@ct.gov, please reference the NDDDB number in the subject line of this letter in any future correspondence.

Sincerely,

A handwritten signature in black ink, appearing to read "Laura Saucier", enclosed within a thin black rectangular border.


Laura Saucier
Wildlife Biologist

cc. C. Samorajczyk

Natural Diversity Data Base Areas

LITCHFIELD, CT

December 2014

 State and Federal Listed Species
& Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

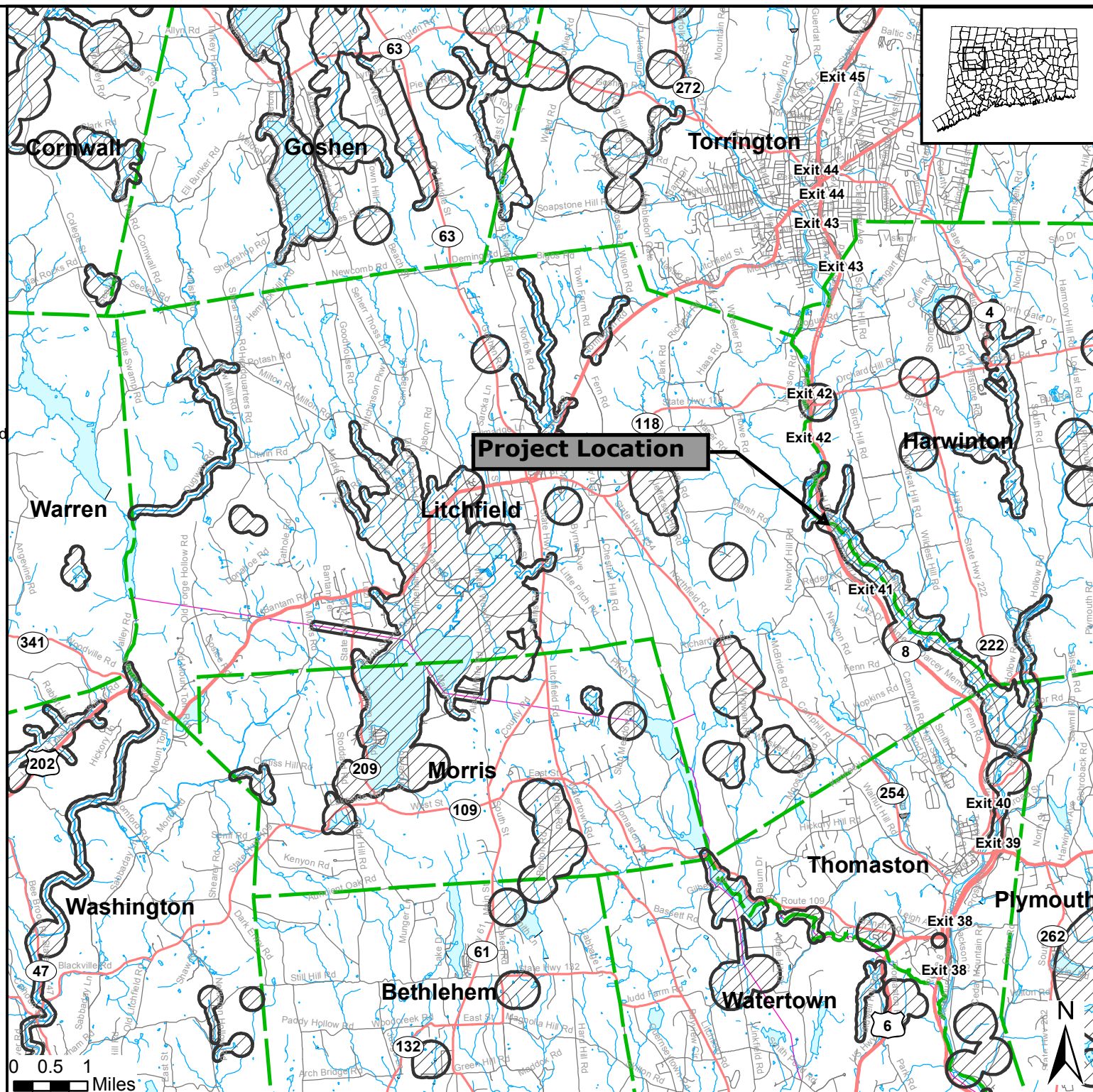
www.ct.gov/deep/nddbrequest

Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011



Connecticut Department of
Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division



STORMWATER POLLUTION CONTROL PLAN

Rehabilitation of Bridge No. 00608 Route 8 Northbound Over The Naugatuck River and Railroad Towns of Litchfield and Harwinton, CT

State Project No. 0073-0182

Applicant:

Connecticut Department of Transportation
District 4
359 South Main St.
Thomaston, CT 06787
c/o Kenneth Fagnoli
Ph. (203)-591-3540

Connecticut Department of Transportation

April 14, 2015

This Stormwater Pollution Control Plan (SPCP) is prepared to comply with the requirements for the General Permit for Stormwater Discharges (GPSD) from Construction Activities. Also to be considered part of the SPCP are the proposed construction plans, special provisions, and the Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction" (Form 816) including supplements thereto and the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Stormwater Pollution Control Plan
Connecticut Department of Transportation

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1. Site Description

Site Description

This project consists of the rehabilitation of bridge no. 00608 which carries Route 8 northbound over the Naugatuck River and the Naugatuck Railroad in the Towns of Litchfield and Harwinton. Route 8 is classified as a rural expressway with a posted speed limit of 65 mph and an ADT of 24,600. The Naugatuck River is classified as impaired due to Whole Effluent Toxicity (WET) within the project limits however there will be no direct discharge of water to the river. The traffic will be accommodated by means of a temporary crossover of northbound traffic to the southbound expressway, separated by temporary concrete barrier. This is a similar traffic arrangement that was used for Project No. 073-164.

The purpose of this project is to rehabilitate bridge no. 00608. The concrete deck is in poor condition and the substructure and superstructure are in need of extensive repairs.

Site work includes the construction of a single lane temporary crossover to convey northbound traffic on the southbound expressway, separated by temporary concrete barrier. The bridge will be closed to vehicular traffic for the duration of the rehabilitation. The design includes increasing the number of scuppers on bridge no. 00608 from six (6) to ten (10). There will be one median catch basin converted to a manhole due to the location of the temporary crossover. The flow will be accommodated by a new catch basin adjacent to the converted manhole. There will be no added flow to the system.

Estimated Disturbed Area

The total area for this project site is 77.04 acres. Of this area, 1.22 acres will be disturbed by construction activities.

Estimated Runoff Coefficient

The pre-constriction composite runoff coefficient (C) is 0.372 for the total site of 77.04 acres.

The post-construction composite runoff coefficient (C) is 0.372 for the total site of 77.04 acres.

The estimated runoff coefficients, with the corresponding contributing areas, are shown in Appendix B.

Receiving Waters

The Naugatuck River is the ultimate receiving water for the site however no stormwater will be discharged directly into the river.

Extent of Wetlands on Site

There are wetlands adjacent to the site however no wetland area will be disrupted during construction.

2. Construction Sequencing

The contractor will be given approximately two construction seasons for the construction of all phases of the project.

The suggested sequence of construction is as follows:

Sequence 1:

1. Conduct a preconstruction meeting.
2. Install erosion controls at the effected inlets and at limits of disturbed slopes.
3. Perform clearing and grubbing activities.
4. Remove conflicting pavement markings
5. Install advanced warning signs and traffic drums and cones as shown on Stage 1 plans.
6. Install pavement markings
7. Place temporary impact attenuation systems and place temporary precast concrete barrier curb
8. Construct crossover

Sequence 2:

1. All applicable signs from Stage 1 to remain
2. Relocate temporary precast concrete barrier curb and impact attenuation system
3. Maintain traffic pattern for duration of work on the bridge

Post Sequence 2:

1. Relocate temporary precast concrete barrier curb and temporary impact attenuation system as shown on the Stage 1 plans
2. Return crossover area to preconstruction condition. Milling and resurfacing will be required on Route 8 to restore the preconstruction conditions.
3. Construct guiderail as depicted on PLN-02
4. Remove temporary precast concrete barrier curb and temporary impact attenuation systems
5. Remove any remaining crossover striping and restore with striping as it was prior to the beginning of the project.
6. Grade grass slopes and immediately stabilize. Establish turf, per plan, on all remaining disturbed areas. Install landscaping.
7. Remove erosion controls when it is determined that disturbed areas have been stabilized. (This determination will be made by the Engineer).

8. All post-construction stormwater structures shall be cleaned of construction sediment and any remaining silt fence shall be removed prior to the filing of the "Notice of Termination Form".
9. Perform project cleanup.

If the construction sequencing activities create an area of disturbance between two (2) acres and five (5) acres per discharge point, the Contractor must submit to the Engineer a revised SPCP for review and approval. The SPCP must include locations of the temporary sedimentation trap per discharge point with a capacity to contain 134 cubic yards per acre of material in accordance with the 2002 Guidelines. The Contractor shall provide an inspection and maintenance plan for the temporary sedimentation trap as part of the amended SPCP.

3. Control Measures

Erosion and Sedimentation Controls

CT DOT will have construction inspection personnel assigned to the project in order to oversee the Contractor's operations to ensure compliance with the provisions of the Standard Specifications. Further CT DOT oversight is provided by the District 4 Environmental Coordinator and the Office of Environmental Planning.

The following timelines will be followed for the proposed construction activities:

- If construction activities are complete or have been temporarily halted for more than seven (7) days, stabilization activities will be implemented within three (3) days.
- Areas that remain disturbed but inactive for at least 30 days shall receive temporary seeding or soil protection within seven (7) days.
- Disturbed areas that do not establish a vegetative cover within 30 days of seeding shall have erosion control blankets installed. Prior to the erosion control blanket installation, the soil would be prepared with the application of lime, fertilizer, and seed.
- Areas that will be disturbed past the planting season will be covered with a long-term, non-vegetative stabilization method that will provide protection through the winter.
- Stabilization practices will be implemented as quickly as possible in accordance with the Guidelines.

- The Contractor shall stabilize disturbed areas with temporary or permanent measures as quickly as possible after the land is disturbed. Requirements for soil stabilization are detailed in Form 816 Section 1.10.03, Best Management Practices.

Soil Stabilization and Protection

Temporary Stabilization Practices

- Erosion Control Matting: On slopes steeper than 4:1 and in the proposed swale erosion control matting shall be used to stabilize the topsoil.
- Silt Fence: Silt fence shall be placed at the base of all disturbed embankments.
- Hay Bales: Hay bales shall be used where necessary in accordance with the 2002 Connecticut Erosion and Sedimentation Guidelines.
- Dust Control: Routine sweeping and application of dust suppression agents, including water and calcium chloride, over exposed subbase shall be completed for dust control.

Stabilization practices shall be implemented no more than three days after completion, as final grades are reached, or if work has been suspended for more than seven days.

Temporary seeding shall be spread over any disturbed areas which will remain inactive for at least 30 days. Areas to remain disturbed through winter shall be protected with non-vegetative stabilization measures. The Contractor must provide an Erosion and Sedimentation Control plan for each winter season during construction operations.

The Contractor may use other controls in the project as necessary if they conform to the 2002 Connecticut Erosion and Sedimentation Guidelines and are approved by the Engineer. The contractor will be required to provide the necessary details for any erosion controls not specifically called for on the project plans.

During construction, all areas disturbed by the construction activity that have not been stabilized, structural control measures, and locations where vehicles enter or exit the site shall be inspected at least once every seven calendar days. These areas shall also be inspected within 24 hours following any storm in which 0.5 inches or greater of rain occurs.

Permanent Stabilization Practices

All new embankments disturbed by construction and unpaved areas that are graded or disturbed by construction will receive erosion control matting, topsoil and/or turf establishment. The Contractor may use other permanent stabilization practices approved by the Engineer and conforming to Connecticut's Erosion and Sedimentation Control Guidelines (2002).

The Hydraulic Engineering Circular Number 21 (HEC 21) outlines that water free falling over 25 feet will disperse enough to cause no erosion damage to occur. Since the proposed scuppers are all at least 26 feet above the ground, no outfall protection is required.

Maintenance

All construction activities and related activities shall conform to the requirements of Section 1.10 "Environmental Compliance" of ConnDOT's Standard Specifications, Form 816. In general, all construction activities shall proceed in such a manner so as not to pollute any wetlands, watercourses, water body, and conduit carrying stormwater. The Contractor shall limit, in so far as possible, the surface area of earthen materials exposed by construction activity and immediately provide temporary and permanent pollution control to prevent soil erosion and contamination on the site. Water pollution control provisions and best management practices per Section 1.10.03 of the Standard Specifications shall be administered during construction. Control measures shall be inspected and maintained in accordance with the 2002 Guidelines and as directed by the Engineer.

The contractor will be responsible to implement, operate, monitor, and perform the required maintenance of the erosion and sedimentation control measures described, shown and detailed on the Construction Documents. The Contractor will be familiar with all aspects of the names control measures and be responsible for the correction of and failures by repair or modification as may be recommended by an E&S professional and in coordination with any approving agencies.

The following Maintenance practices will be completed as part of this contract:

- All E&S controls will be inspected within 24 hours of the storm event (0.1 inch) to ensure they are still properly located, anchored and in good working condition. All necessary repairs and/or replacements will be made promptly by the Contractor as needed. Sediment and debris build-up will be removed by the Contractor as required based upon the outcome of inspections.
- Perimeter sediment control systems will be inspected daily to ensure they are properly secured and functioning as designed. Cleaning will occur when accumulated sediments reach one-half the original height of the silt or hay bale fence or as directed by the Engineer. If the perimeter fencing is breached at any location, the breach will be immediately repaired by the Contractor and the repair will be verified by the Engineer and/or the inspecting agent.
- Following the completion of construction, the Contractor will repair any eroded areas as directed by the Engineer. The Contractor will repair all eroded slopes, displaced riprap or geotextile matting, and will clean any sediment from exposed riprap surfaces.
- The Contractor will clean sediment and debris from all drainage structures and pipes as required in order to keep the system functioning properly during construction and after the completion of construction.
- Following final stabilization, the Contractor will remove all silt fencing.

4 Dewatering Wastewaters

Dewatering Guidelines

If encountered, dewatering wastewaters will be infiltrated into the ground unless otherwise directed by the Engineer. When dewatering is necessary, pumps used shall not be allowed to discharge directly into a wetland or watercourse. Prior to any dewatering, the Contractor must submit to the Engineer a written proposal for specific methods and devices to be used, and must obtain the Engineer's written approval of such methods and devices, including, but not limited to, the pumping of water into a temporary sedimentation basin, providing surge protection at the inlet or outlet of pumps, floating the intake of a pump, or any other method for minimizing and retaining the suspended solids. If the Engineer determines that a pumping operation is causing turbidity problems, the Contractor shall halt said operation until a means of controlling the turbidity is submitted by the Contractor in writing to the Engineer, approved in writing by the Engineer and implemented by the Contractor. No discharge of dewatering wastewater shall contain or cause a visible oil sheen, floating solids or foaming in the receiving water. If required, all activities are to be performed in compliance with ConnDOT Form 816.

5. Post-Construction Stormwater Management

Post-construction Guidelines

After the project is complete, the Department will perform the following maintenance and restorative measures:

- Litter/debris will be removed from the site regularly.
- Mowing and maintenance of the turf areas and vegetated areas will occur as needed.
- Riprap outlet protection will be inspected and repaired annually or as needed.
- The stormwater basin will be inspected and repaired annually or as needed. Sediment will be removed when it interferes with the detention capacity of the basin. Outlets will be checked for excessive scour and repaired as needed.

Post Construction Performance Standards

	Water Quality Volume (ac-ft)	Water Quality Flow (cfs)
System 1	0.345	1.42
System 2	0.339	2.06
System 3	0.253	2.14

Water Quality Flow and Water Quality Volume calculations can be found in Appendix B.

Runoff reduction and options for Low Impact Development (LID) measures are limited due to property ownership and topographical constraints. Project design measures included to reduce runoff include maximizing sheet flow, staging slope disturbance during construction, catch basins with sumps, and grass swales.

The site is a linear project in which the effective impervious area within the watershed will not be increased due to construction. The right of way limitations and presence of exposed bedrock make infiltration of the water quality volume via traditional above ground storage or underground detention infeasible.

The stormwater discharge for this project has been designed keeping in mind a goal of 80% removal of annual sediment. The existing grass median between the northbound and southbound lanes of Route 8 will be used to infiltrate stormwater before entering the closed system. Existing drainage outfalls on site have been inspected and the total discharge (Q) of the site will be reduced. Correspondence with the CTDOT District 4 drainage engineer and field inspection has determined that the existing outlet protection is sufficient at each outfall location and will not require additional work. The proposed bridge scuppers will not discharge directly into the Naugatuck River and will not include piping to the ground and will therefore not require splash pads.

6. Other Controls

Waste Disposal

Construction site waste shall be properly managed and disposed of during the entire construction period. Additionally,

- A waste collection area will be designated. The selected area will minimize truck travel through the site and will not drain directly to the adjacent wetlands.
- Waste collection shall be scheduled regularly to prevent the containers from overflowing.
- Spills shall be cleaned up immediately.
- Defective containers that may cause leaks or spills will be identified through regular inspection. Any found to be defective will be repaired or replaced immediately.
- Any stockpiling of materials should be confined to the designated area as defined by the engineer.

Washout Areas

Washout of applicators, containers, vehicles and equipment for concrete shall be conducted in a

designated washout area. No surface discharge of washout wastewaters from the area will be allowed. All concrete washwater will be directed into a container or pit such that no overflows can occur. Washout shall be conducted in an entirely self-contained system and will be clearly designed and flagged or signed where necessary. The washout area shall be located outside of any buffers and at least 50 feet from any stream, wetland or other sensitive water or natural resources as determined or designated by CTDOT Office of Environmental Planning.

The designated area shall be designed and maintained such that no overflows can occur during rainfall or after snowmelt. Containers or pits shall be inspected at least once a week to ensure structural integrity, adequate holding capacity and will be repaired prior to future use if leaks are present. The contractor shall remove hardened concrete waste when it accumulates to a height of ½ of the container or pit or as necessary to avoid overflows. All concrete waste shall be disposed of in a manner consistent with all applicable laws, regulations and guidelines.

Anti-tracking Pads and Dust Control

Off-site vehicle tracking of sediments and the generation of dust shall be minimized. Temporary anti-tracking pads from the active work site to the existing pavement will be installed and maintained at the locations shown on the plans. The contractor shall:

- Maintain the entrance in a condition which will prevent tracking and washing of sediment onto paved surfaces.
- Provide periodic top dressing with additional stone or additional length as conditions demand.
- Repair any measures used to trap sediment as needed.
- Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces.
- Ensure roads adjacent to a construction site are left clean at the end of each day.

If the construction entrance is being properly maintained and the action of a vehicle traveling over the stone pad is not sufficient to remove the majority of the sediment, then the contractor shall either:

- Increase the length of the construction entrance,
- Modify the construction access road surface, or
- Install washing racks and associated settling area or similar devices before the vehicle enters a paved surface.

For construction activities which cause airborne particulates, wet dust suppression shall be utilized. Construction site dust will be controlled by sprinkling the ground surface with water until it is moist on an as-needed basis. The volume of water sprayed shall be such that it suppresses dust yet also prevents the runoff of water.

Post-Construction

Upon completion of construction activities and stabilization of the site, all post-construction stormwater structures shall be cleaned of construction sediment and any remaining silt fence shall be removed prior to acceptance of the project by CTDOT. Sediment shall be properly disposed of in accordance with all applicable laws, regulations and guidelines.

Maintaining and Storing Vehicles and Equipment

The contractor shall take measures to prevent any contamination to wetlands and watercourses while maintaining and storing construction equipment on the site. All chemical and petroleum containers stored on site shall be provided with impermeable containment which will hold at least 110% of the volume of the largest container, or 10% of the total volume of all containers in the area, whichever is larger, without overflow from the containment area. All chemicals and their containers shall be stored under a roofed area except for those stored in containers of 100 gallon capacity or more, in which case double-walled tanks will suffice.

7. Inspections

Inspection Guidelines

All construction activities shall be inspected initially for Plan implementation and then weekly for Routine Inspections.

During construction, all areas disturbed by the construction activity that have not been stabilized, all erosion and sedimentation control measures, all structural control measures, soil stockpile areas, washout areas and locations where vehicles enter or exit the site shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and impacts to receiving waters at least once every seven calendar days and within 24 hours of the end of a storm that generates a discharge.

For storms that end on a weekend, holiday or other time in which working hours will not commence within 24 hours, an inspection is required within 24 hours only for storms that equal or exceed 0.5 inches. For lesser storms, inspection shall occur immediately upon the start of subsequent normal working hours.

Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

Qualified personnel provided by the DOT District 4 Office shall conduct Inspections.

Items to be inspected: the following items shall be inspected as described below:

<u>Item</u>	<u>Procedure</u>
Silt Fence	Silt fence shall be inspected to ensure that the fence line is intact with no breaks or tears. The fence shall be firmly anchored to the ground. Areas where the fence is excessively sagging or where support posts are broken or uprooted shall be noted. Depth of sediment behind the fence shall be noted.
Catch Basin Protection	Protective measures shall be inspected to ensure that sediment is not entering the catch basins. Catch basin sumps shall be monitored for sediment deposition. Hay bales shall be inspected to ensure they have not clogged.
Vehicle Entrances / Exits	Locations where vehicles enter or exit the site shall be inspected for evidence of off-site tracking.
General	Construction areas and the perimeter of the site shall be inspected for any evidence of debris that may blow or wash off site or that has blown or washed off site. Construction areas shall be inspected for any spills or unsafe storage of materials that could pollute off site waters.

8. Keeping Plans Current

Revisions to Stormwater Pollution Control Plans:

CTDOT shall amend the Plan if the actions required by the Plan fail to prevent pollution or otherwise comply with provisions of the General Permit. The Plan shall also be amended whenever there is a change in contractors or sub-contractors at the site. If the results of the inspections require modifications to the Stormwater Pollution Control Plan, the plans shall be revised as soon as practicable after the inspection. Such modifications shall provide for a timely implementation of any changes to non-engineered controls on the site within 24 hours and implementation of any changes to the plan within 3 (three) calendar days following the inspection. For Engineered measures, corrective actions shall be implemented on site within 7 (seven) days and incorporated into a revised Plan within 10 (ten) days of the date of inspection

In no event shall the requirements to keep the Plan current or update a Plan, relieve the permittee and their contactor(s) of the responsibility to properly implement any actions required to protect the waters of the State and to comply with all conditions of the permit.

9. Monitoring Requirements

A written report summarizing the scope of the inspection, the name(s) and qualifications of inspection personnel, the date and time of the inspection, major observations relative to the implementation of the Pollution Control Plan, and actions taken shall be completed within 24 hours of the inspection. This report shall be retained as part of the Stormwater Pollution Control Plan for at least five years after the date of the inspection.

Turbidity monitoring shall be conducted at the three (3) outfall locations, as shown on the Disturbed Areas plans in Appendix B, utilizing a procedure consistent with 40 CFR Part 136 (http://www.epa.gov/region9/qa/pdfs/40cfr136_03.pdf) and may be taken manually or by an in-situ turbidity probe or other automatic sampling device equipped to take individual turbidity readings. The first sample shall be taken within the first hour of stormwater discharge from the site and at least three grab samples shall be taken during a storm event and shall be representative of the flow and characteristics of the discharge. Sampling shall be conducted at least monthly when there is a discharge of stormwater from the site while construction activity is ongoing, until final stabilization of the drainage area associated with each outfall is achieved.

Samples shall be taken during normal working hours, which for this project shall be defined as Monday through Friday, 8 am to 6 pm. If a storm continues past working hours, sampling shall resume the following morning or the morning of the next working day following a weekend or Holiday, as long as the discharge continues. Sampling may be temporarily suspended when conditions exist that may reasonably pose a threat to the safety of the person taking the sample.

Within 30 days following the end of each month, the stormwater sampling results shall be submitted on the Stormwater Monitoring Report (SMR) and submit in accordance with Net DMR. If there is no stormwater discharge during a month, sampling is not required, however, SMR's indicating "no discharge" shall still be submitted as required.

10. Contractors

General

This section shall identify all Contractors and Subcontractors who will perform on site actions which may reasonably be expected to cause or have the potential to cause pollution of the waters of the State.

This Stormwater Pollution Control Plan (SPCP) is prepared to comply with the requirements for the General Permit for Stormwater Discharges (GPSD) from Construction Activities. Also to be considered part of the SPCP are the proposed construction plans, special provisions, and the Connecticut Department of Transportation's "Standard Specifications for Roads, Bridges and Incidental Construction" (Form 816) including supplements thereto and the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control and 2004 Stormwater Quality Manual.

Certification Statement

All contractors and subcontractors must sign the attached statement. All certification will be included in the Stormwater Pollution Control Plan.

State Project No. 0073-0182

Rehabilitation of Bridge No. 00608
Route 8 Northbound over the Naugatuck River and RR
Towns of Litchfield and Harwinton, CT

“I certify under penalty of law that I have read and understand the terms and conditions of the general permit for the discharge of stormwater associated with construction activity. I understand that as Contractor on the project, I am covered by this general permit, and must comply with the terms and conditions of this permit, including, but not limited to, the requirements of the Stormwater Pollution Control Plan prepared for this project.”

GENERAL CONTRACTOR

Signed:_____

Date:_____

Title:_____

Firm:_____

Telephone:_____

Address:_____

SUBCONTRACTOR

Signed:_____

Date:_____

Title:_____

Firm:_____

Telephone:_____

Address:_____

List of applicable Figures / Plans:

Appendix A - Figures

USGS Map-	A-01
Soils Map-	A-02

Appendix B – Drainage Calculations

Drainage Calculations	B-01
Disturbed Areas per Outfall	B-32
Water Quality Computations	B-43

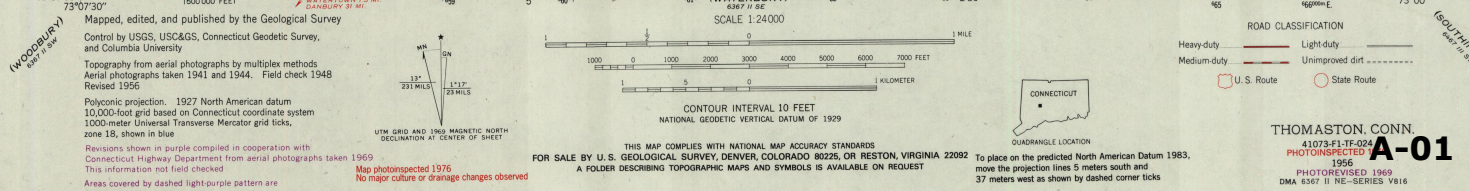
Appendix C – Plan Sheets

Detail Sheets-	C-01
Stage Construction Plans-	C-05
Site Plan-	C-19

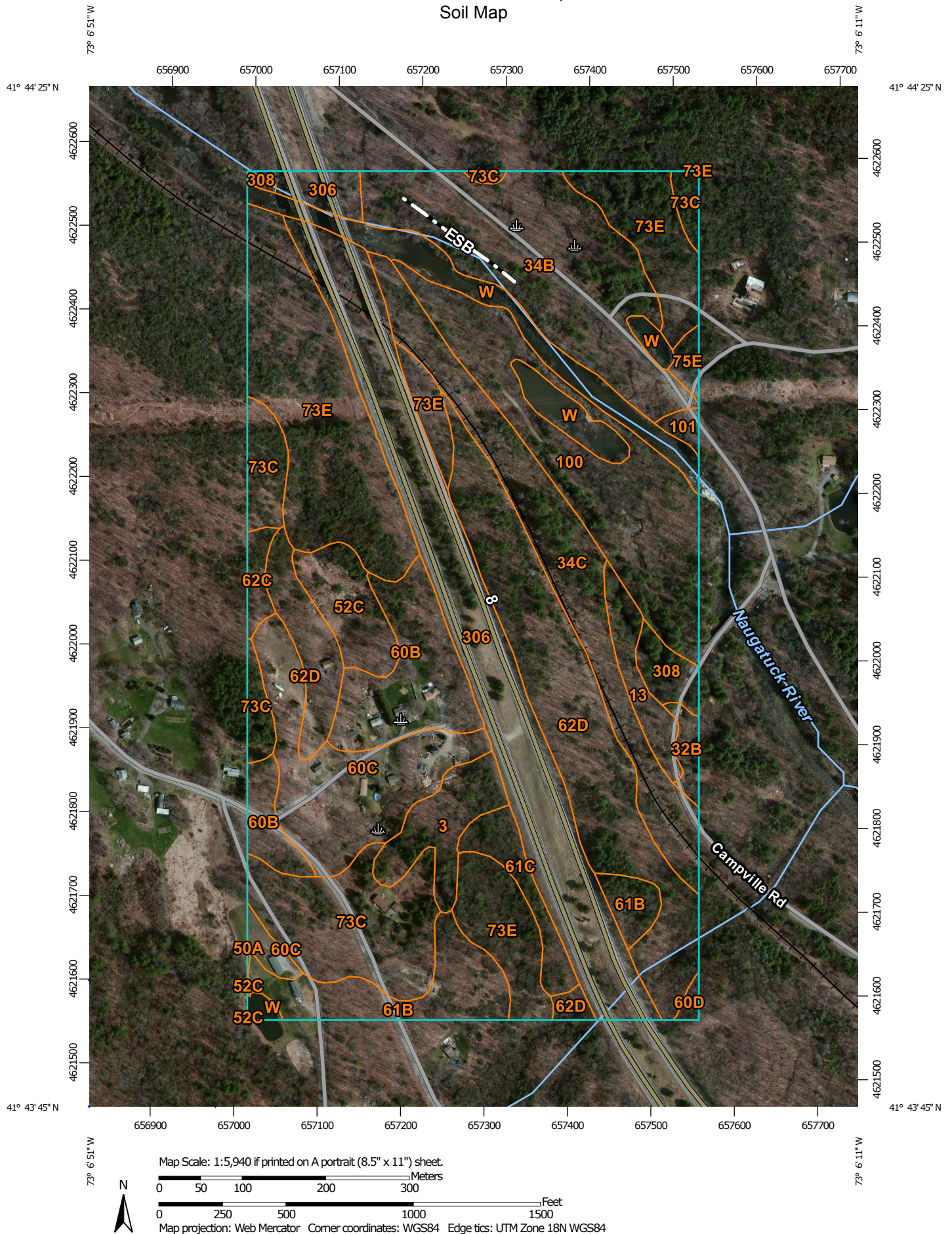
Appendix D – Stormwater Monitoring Report Form

Appendix E – Notice of Termination Form

Appendix A – Figures



Custom Soil Resource Report Soil Map

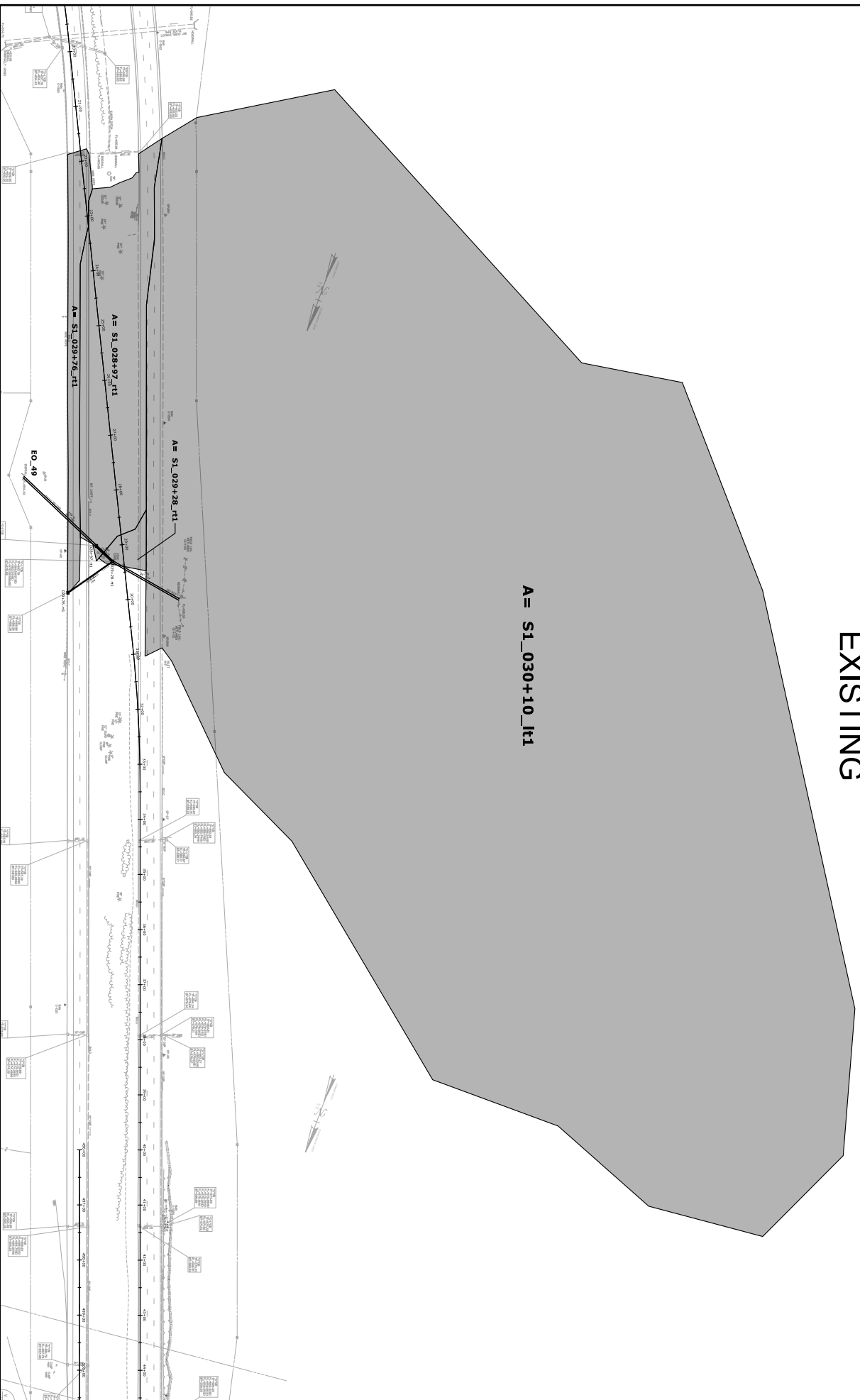


Map Unit Legend

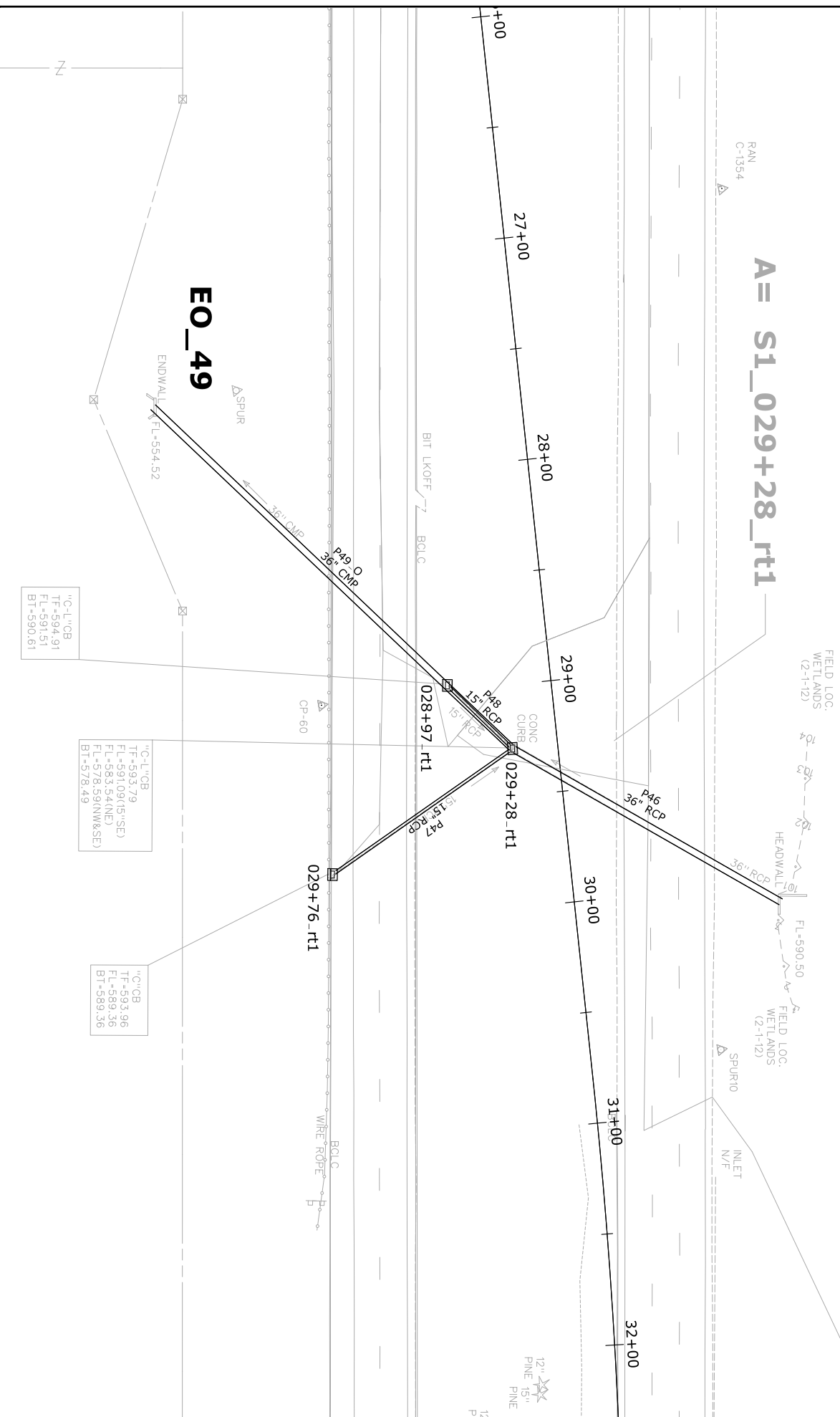
State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, extremely stony	3.1	2.3%
13	Walpole sandy loam	1.9	1.4%
32B	Haven and Enfield soils, 3 to 8 percent slopes	0.7	0.5%
34B	Merrimac sandy loam, 3 to 8 percent slopes	12.7	9.3%
34C	Merrimac sandy loam, 8 to 15 percent slopes	9.3	6.8%
50A	Sutton fine sandy loam, 0 to 3 percent slopes	0.0	0.0%
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	2.8	2.1%
60B	Canton and Charlton soils, 3 to 8 percent slopes	6.9	5.1%
60C	Canton and Charlton soils, 8 to 15 percent slopes	8.4	6.2%
60D	Canton and Charlton soils, 15 to 25 percent slopes	0.2	0.2%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	5.4	4.0%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	2.0	1.5%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	0.8	0.6%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	15.9	11.7%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	10.1	7.5%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	19.4	14.3%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	0.5	0.4%
100	Suncook loamy fine sand	10.8	7.9%
101	Occum fine sandy loam	0.4	0.3%
306	Udorthents-Urban land complex	17.1	12.6%
308	Udorthents, smoothed	1.4	1.0%
W	Water	6.3	4.6%
Totals for Area of Interest		136.0	100.0%

Appendix B – Drainage Calculations

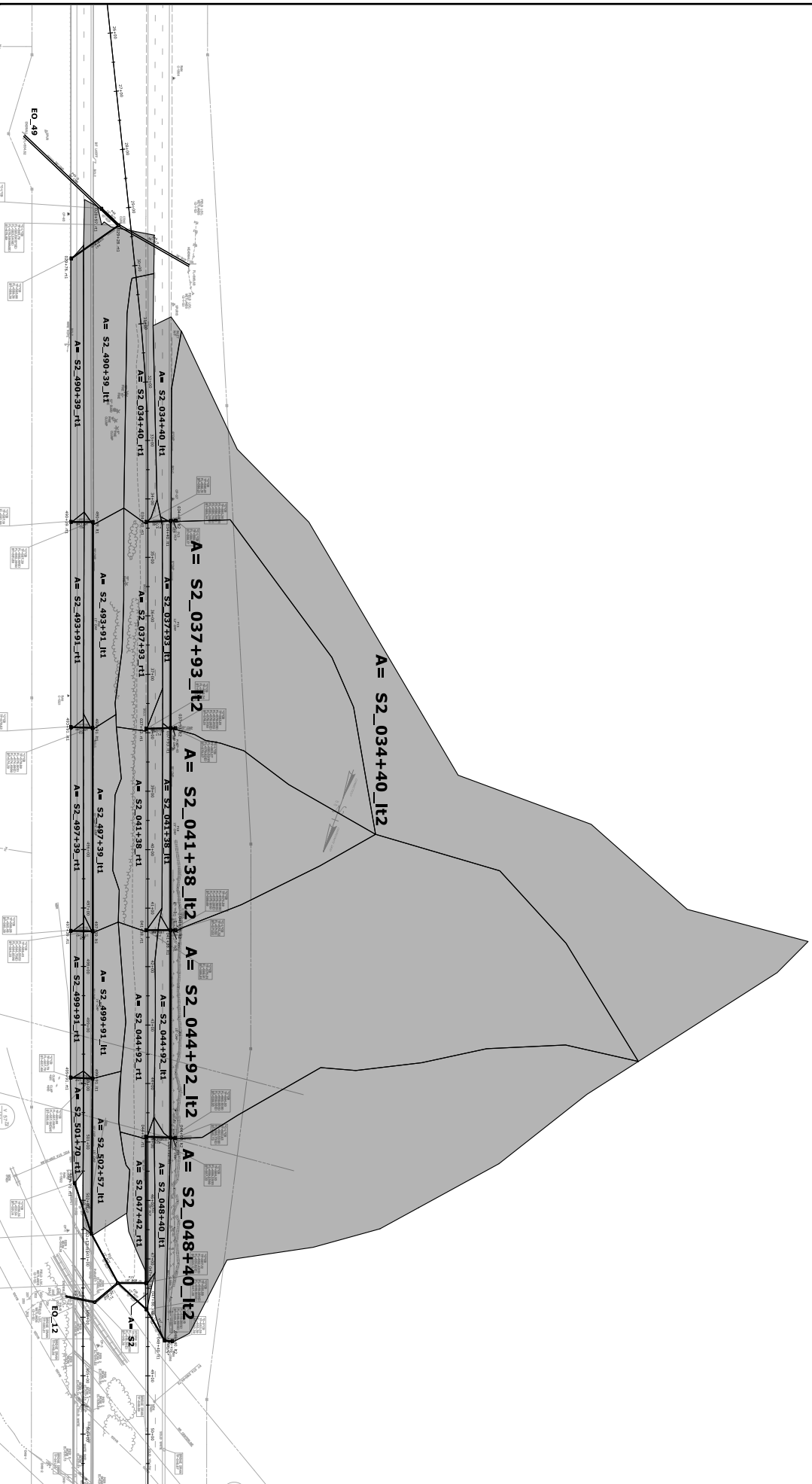
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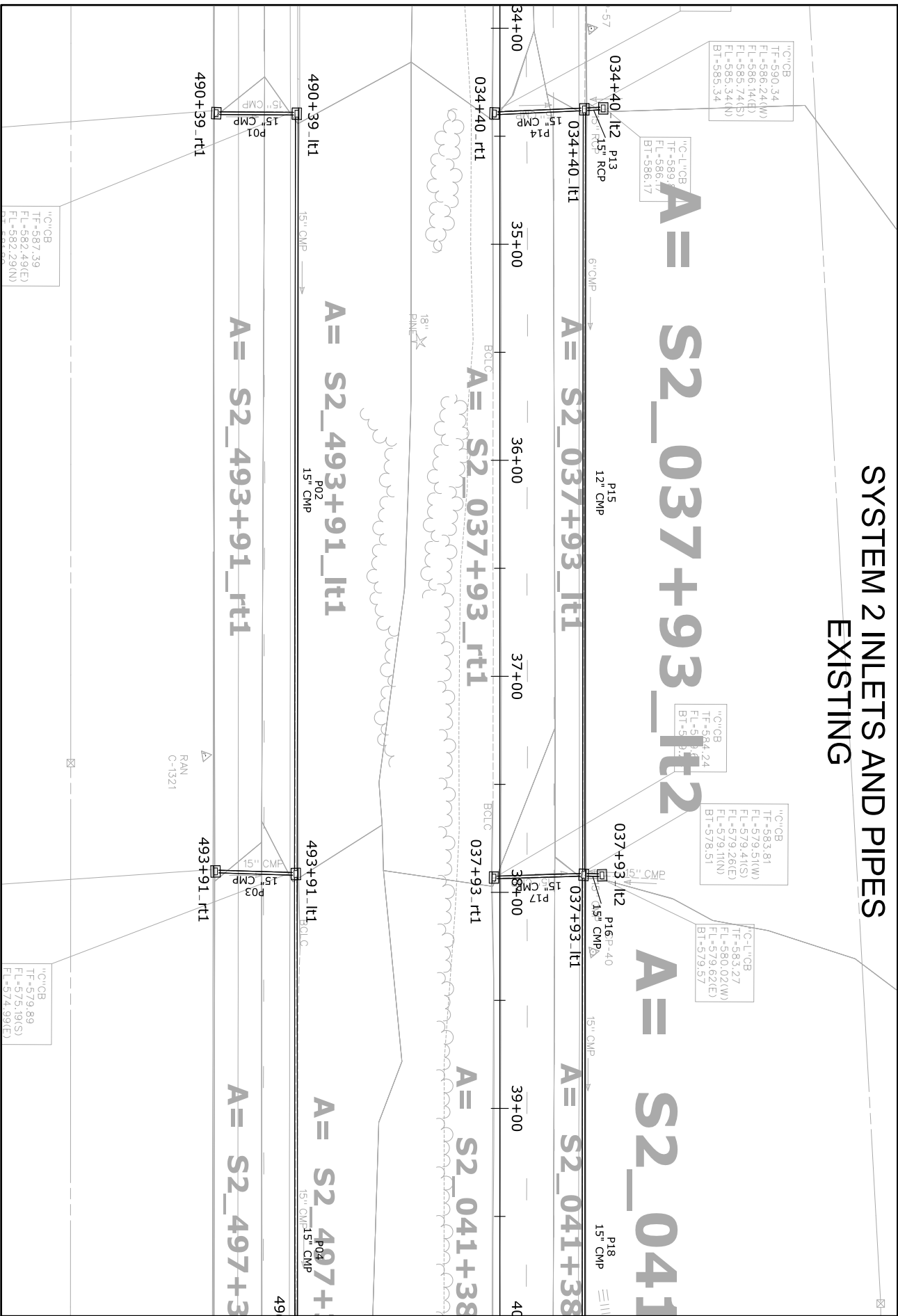
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SYSTEM 2 DRAINAGE AREAS EXISTING



SYSTEM 2 INLETS AND PIPES EXISTING



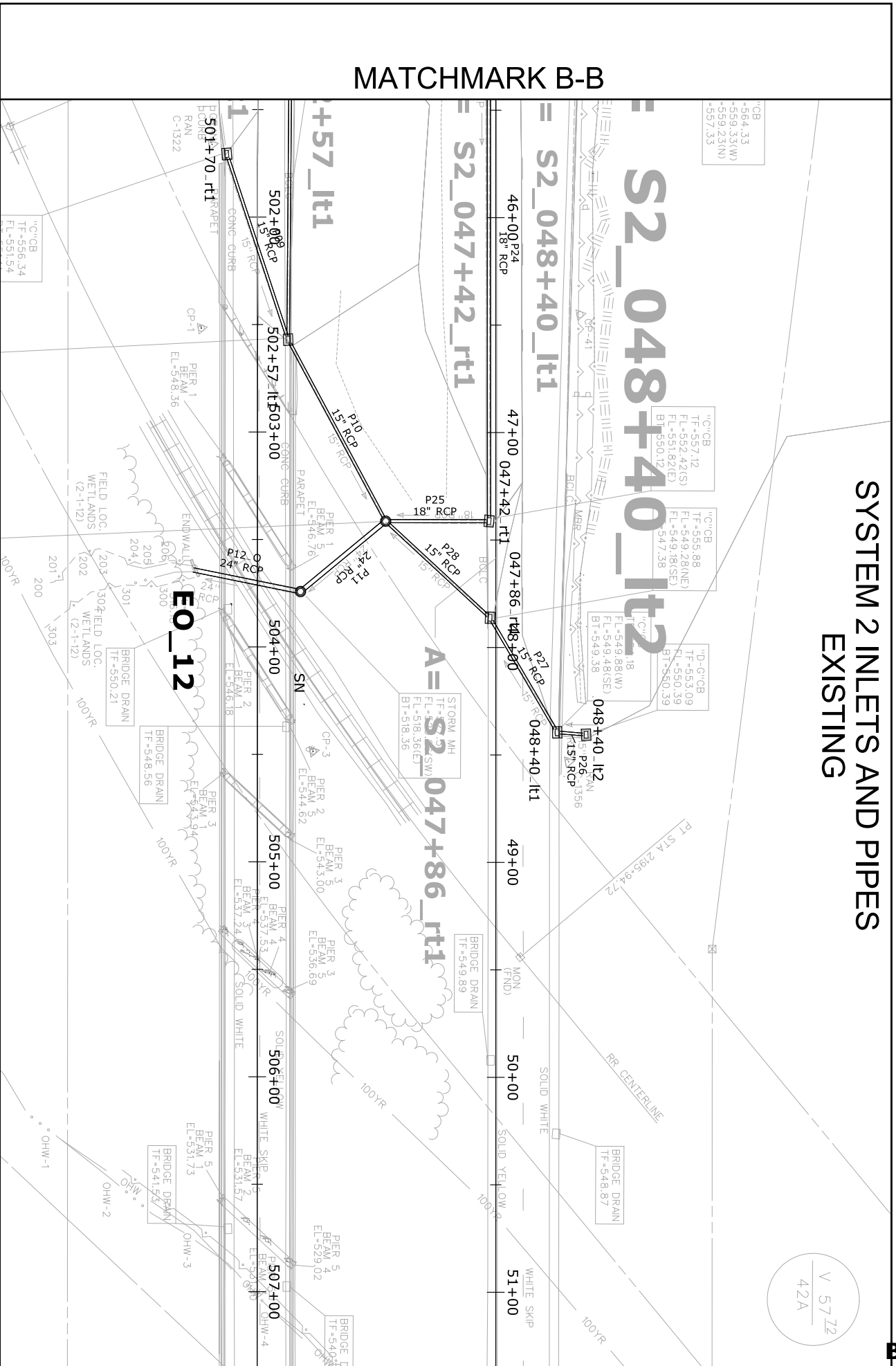
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B-05

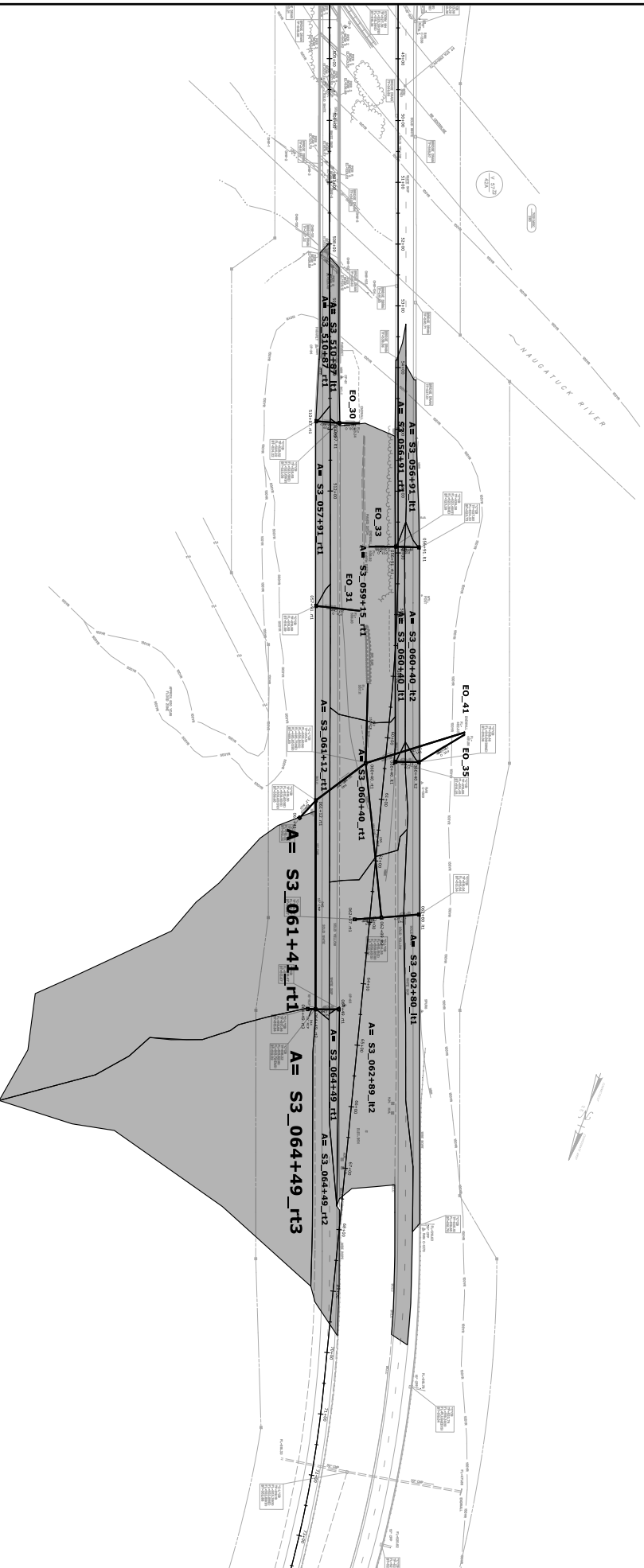


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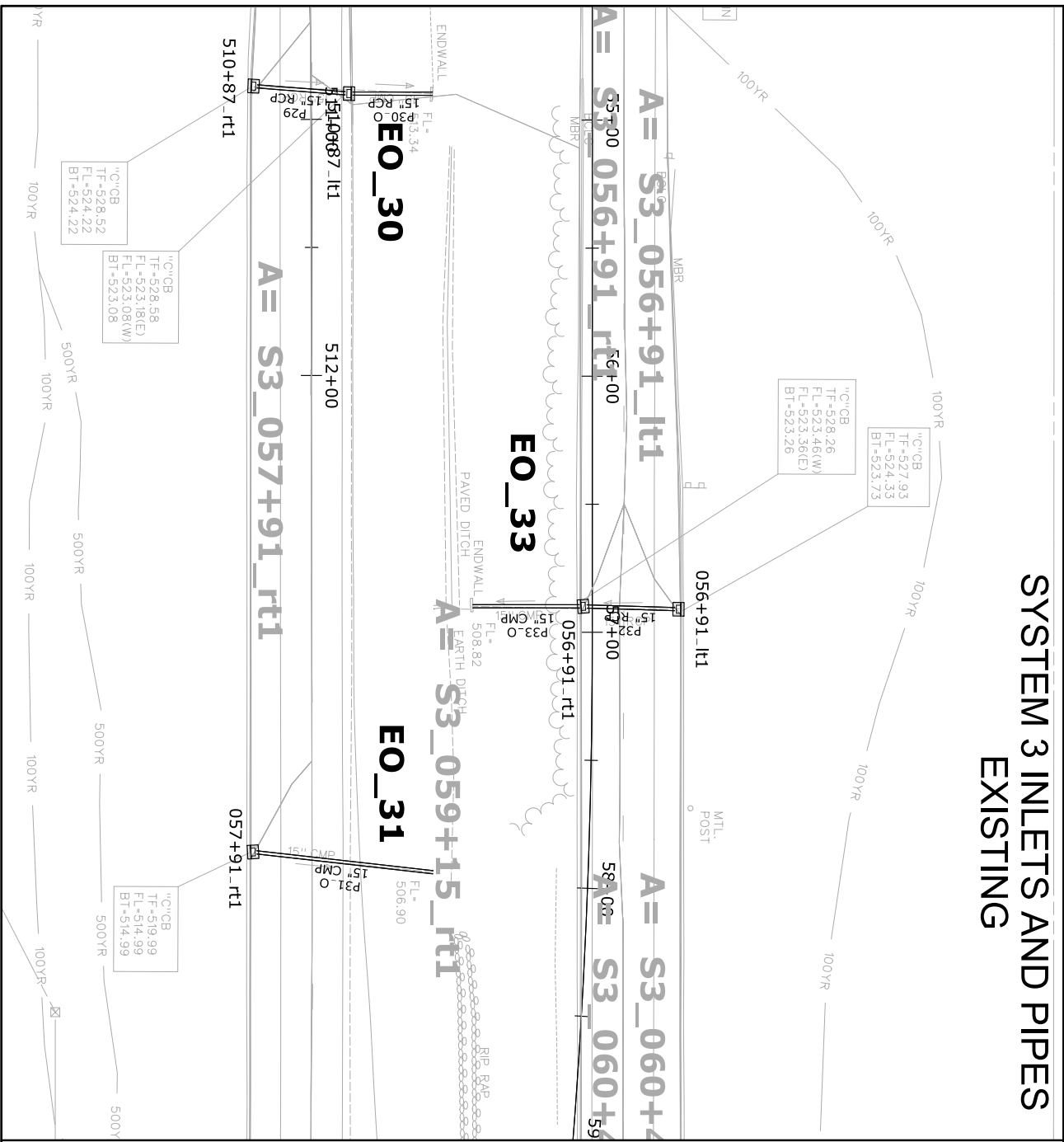
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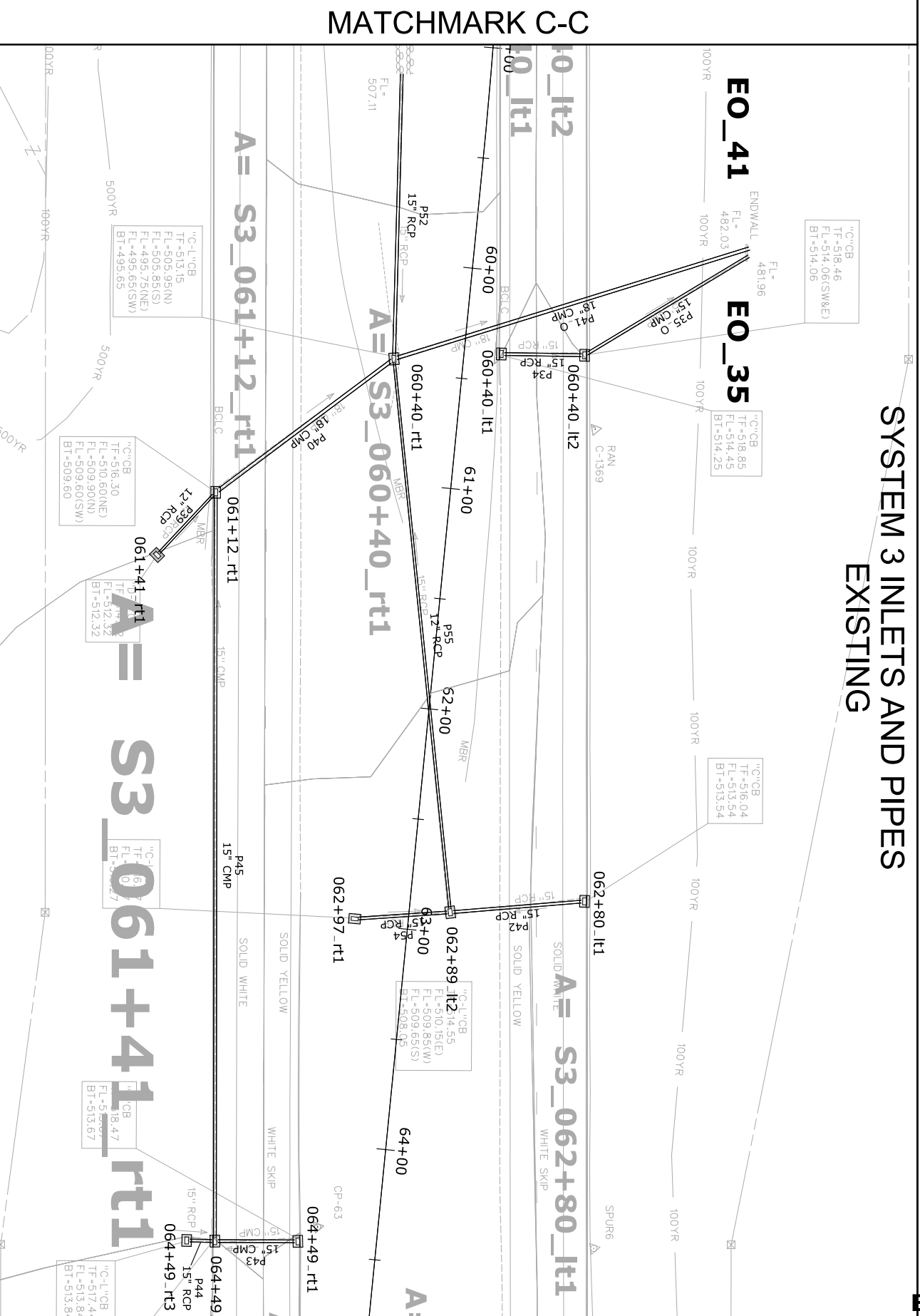


SYSTEM 3 INLETS AND PIPES EXISTING

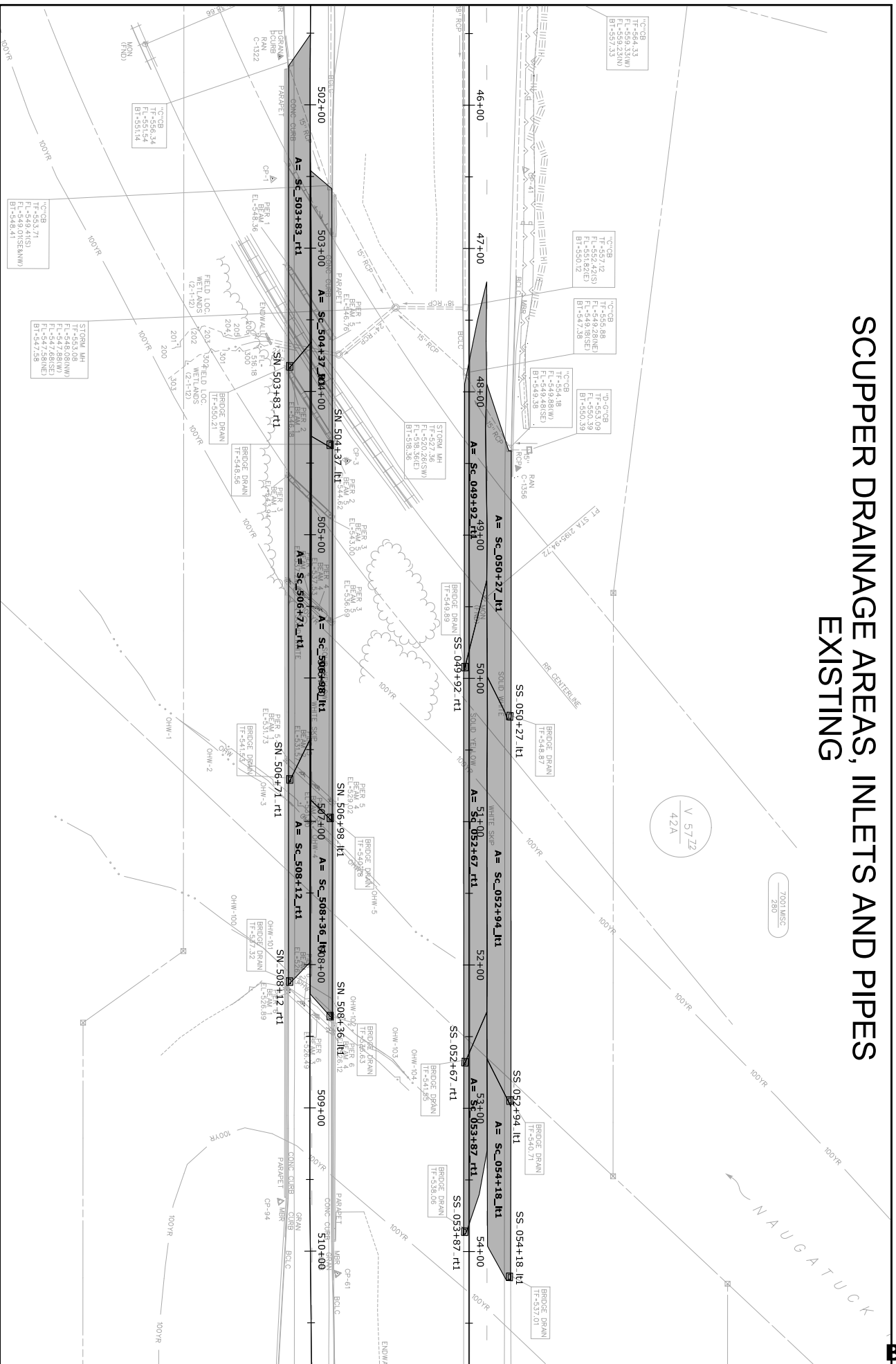


MATCHMARK C-C

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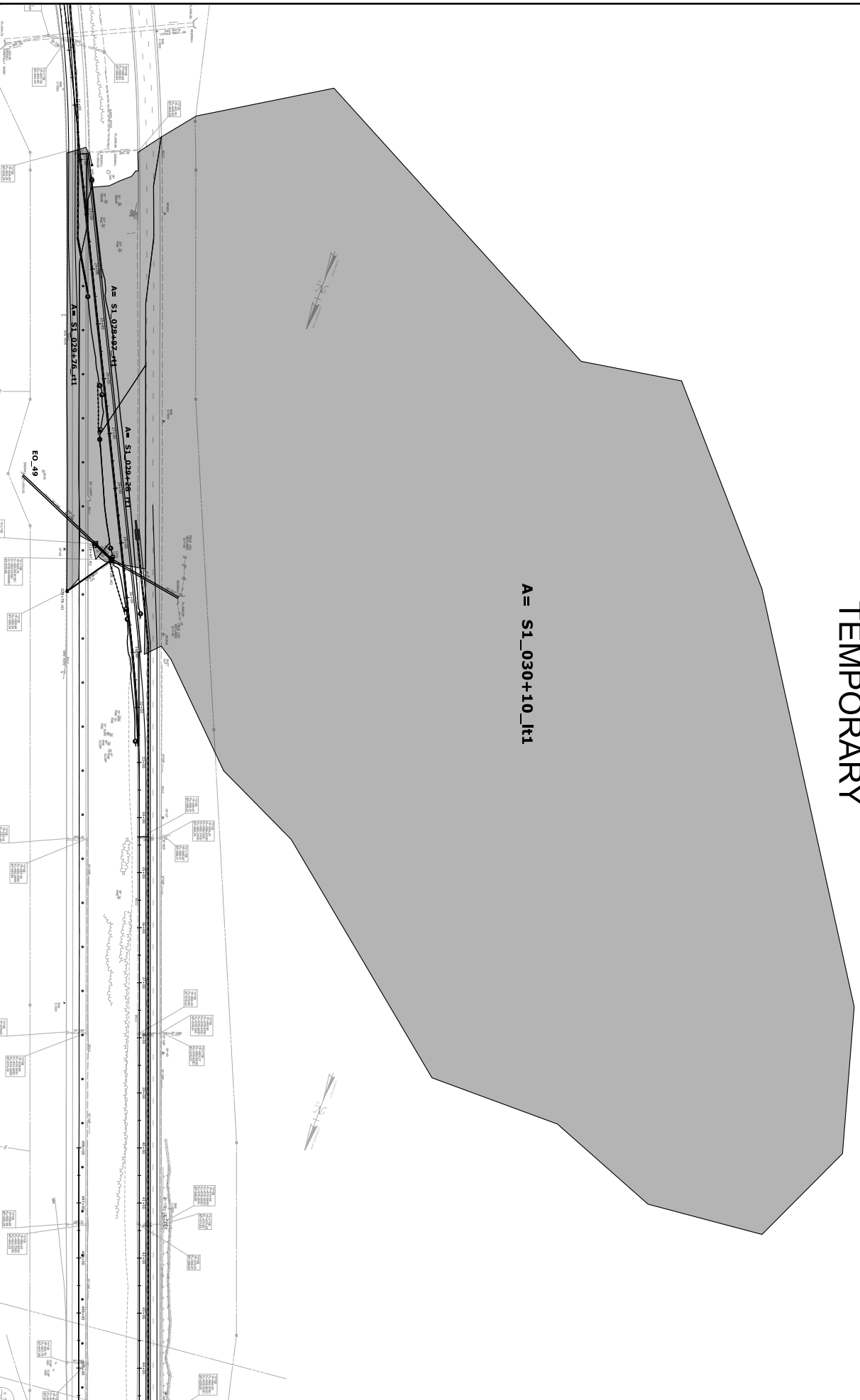


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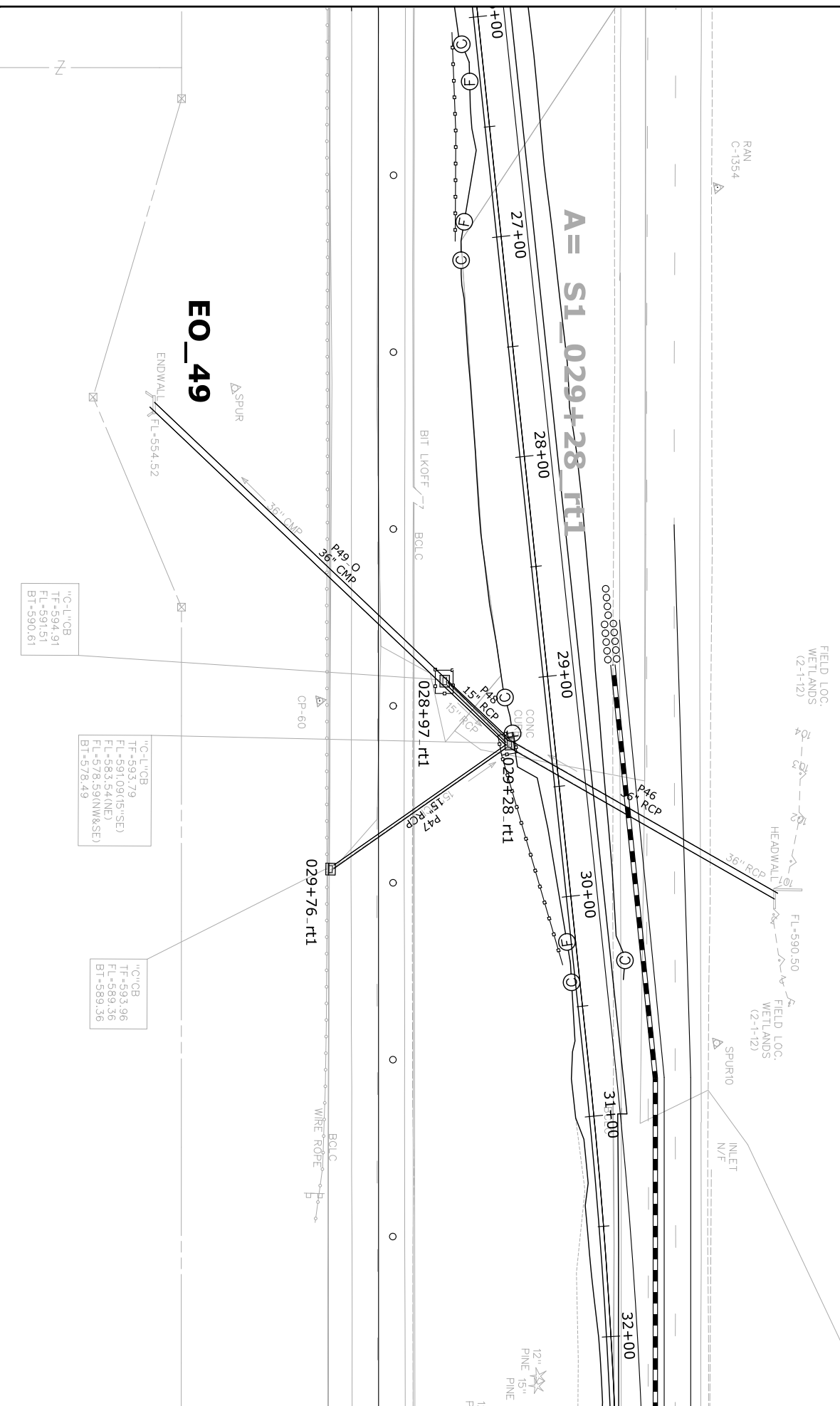


SYSTEM 1 DRAINAGE AREAS TEMPORARY

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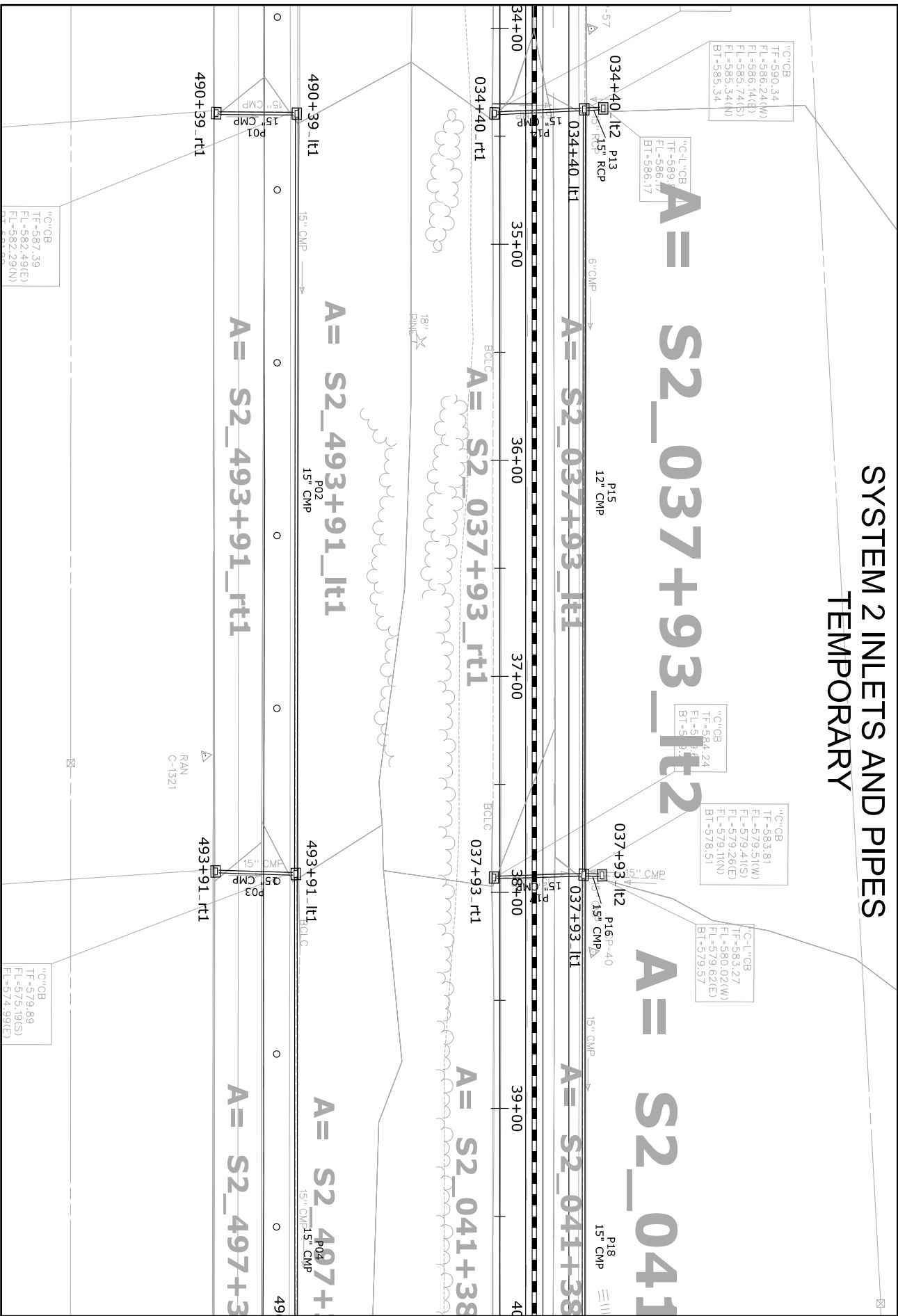
SYSTEM 1 INLETS AND PIPES TEMPORARY



Technical drawing of a road layout, likely a plan view. The drawing shows a road with multiple lanes and a central median. Key features include:

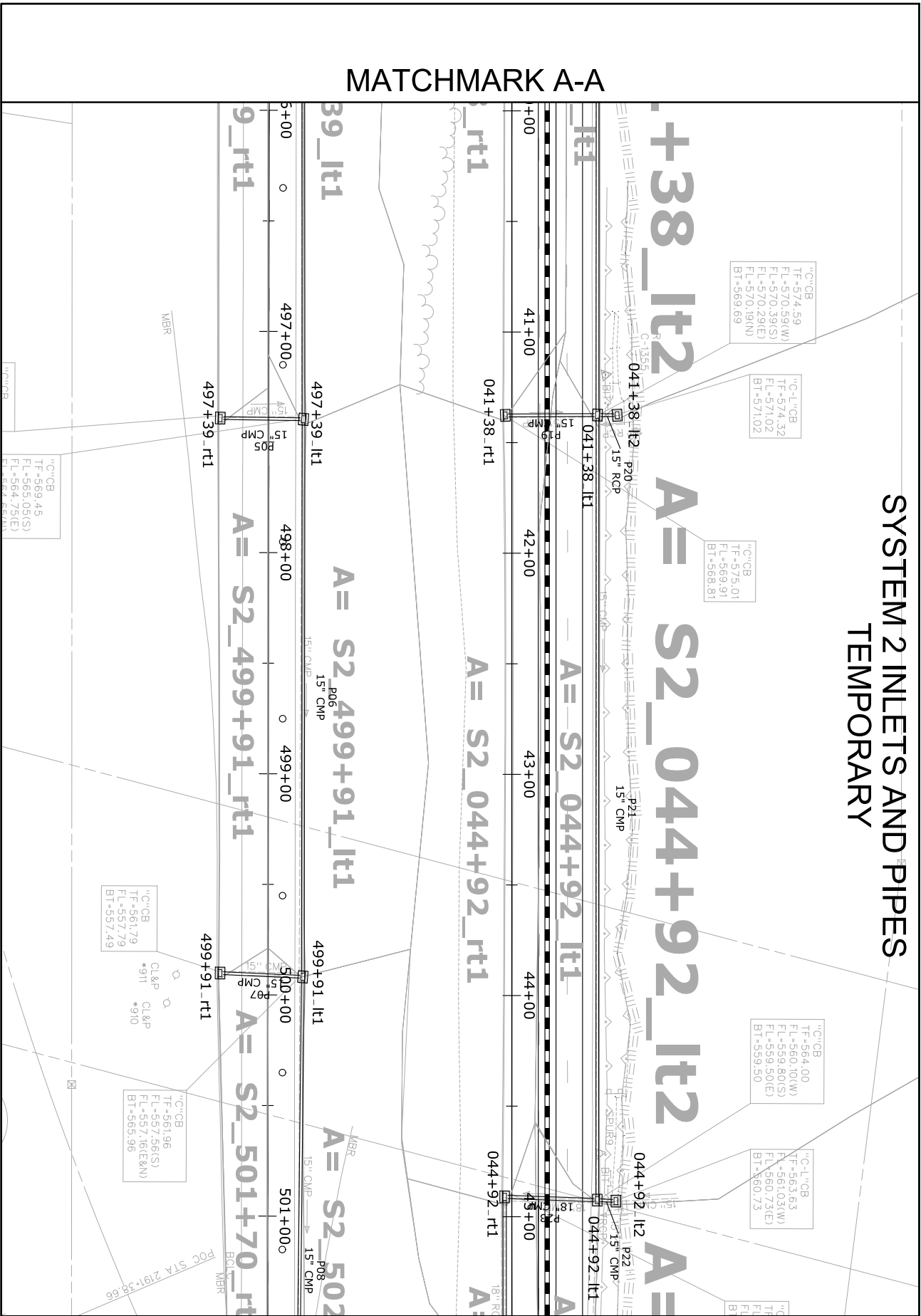
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 - EO_69**
 - EO_70**
 - EO_71**
 - EO_72**

SYSTEM 2 INLETS AND PIPES TEMPORARY



MATCHMARK A-A

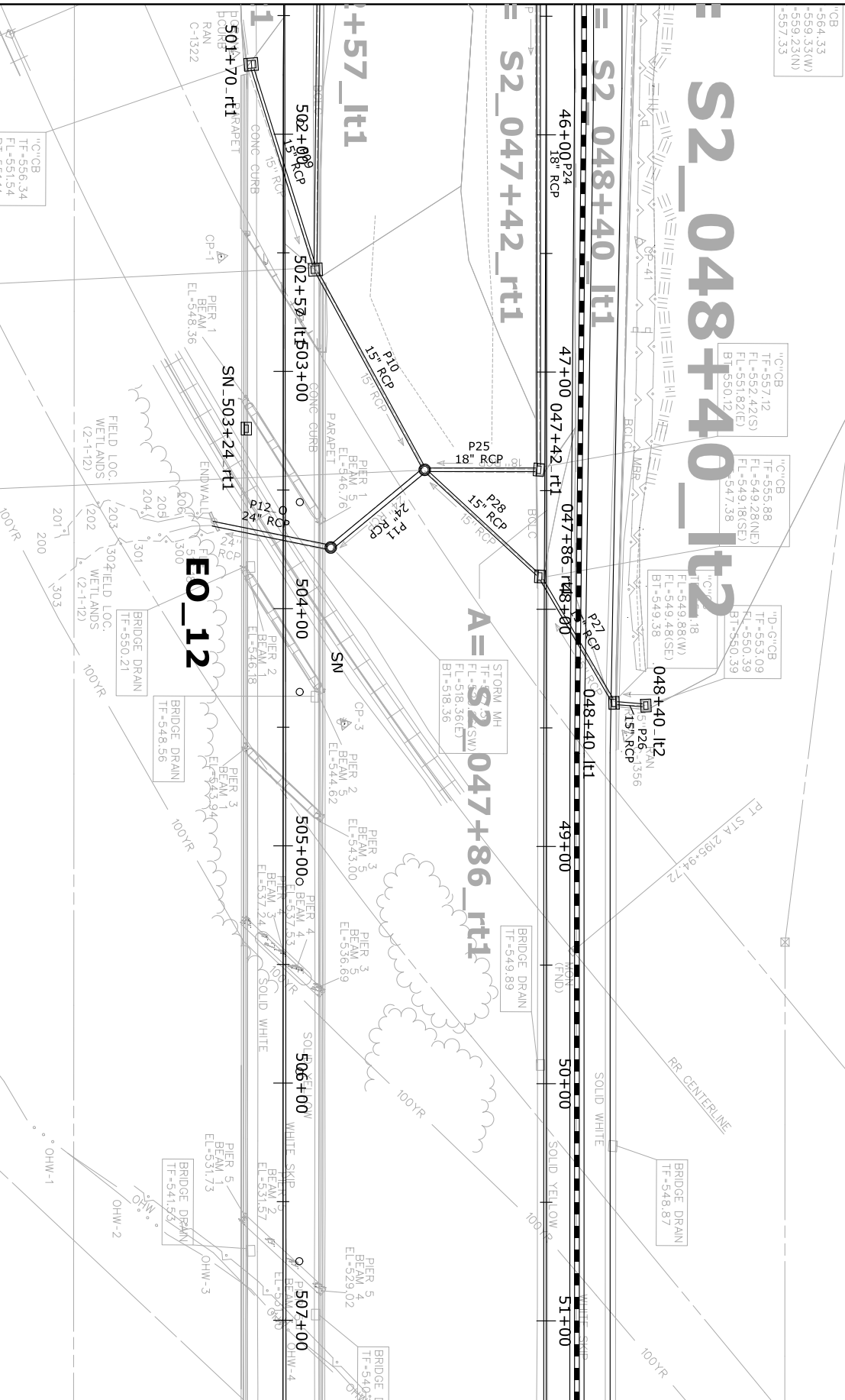
SYSTEM 2 INLETS AND PIPES
TEMPORARY



SYSTEM 2 INLETS AND PIPES TEMPORARY

V 57.72
42A

MATCHMARK B-B



SYSTEM 3 DRAINAGE AREAS TEMPORARY

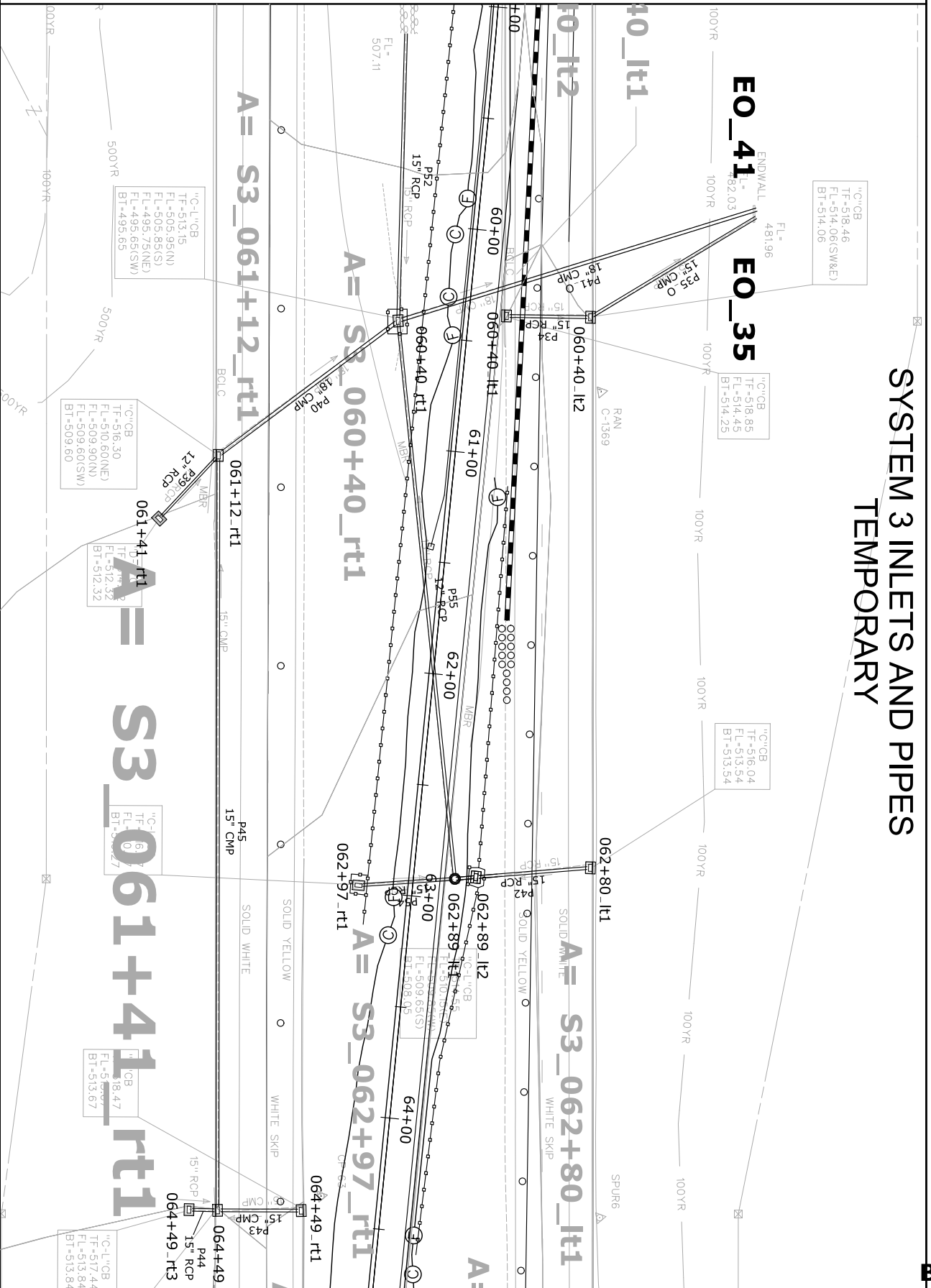


B-18

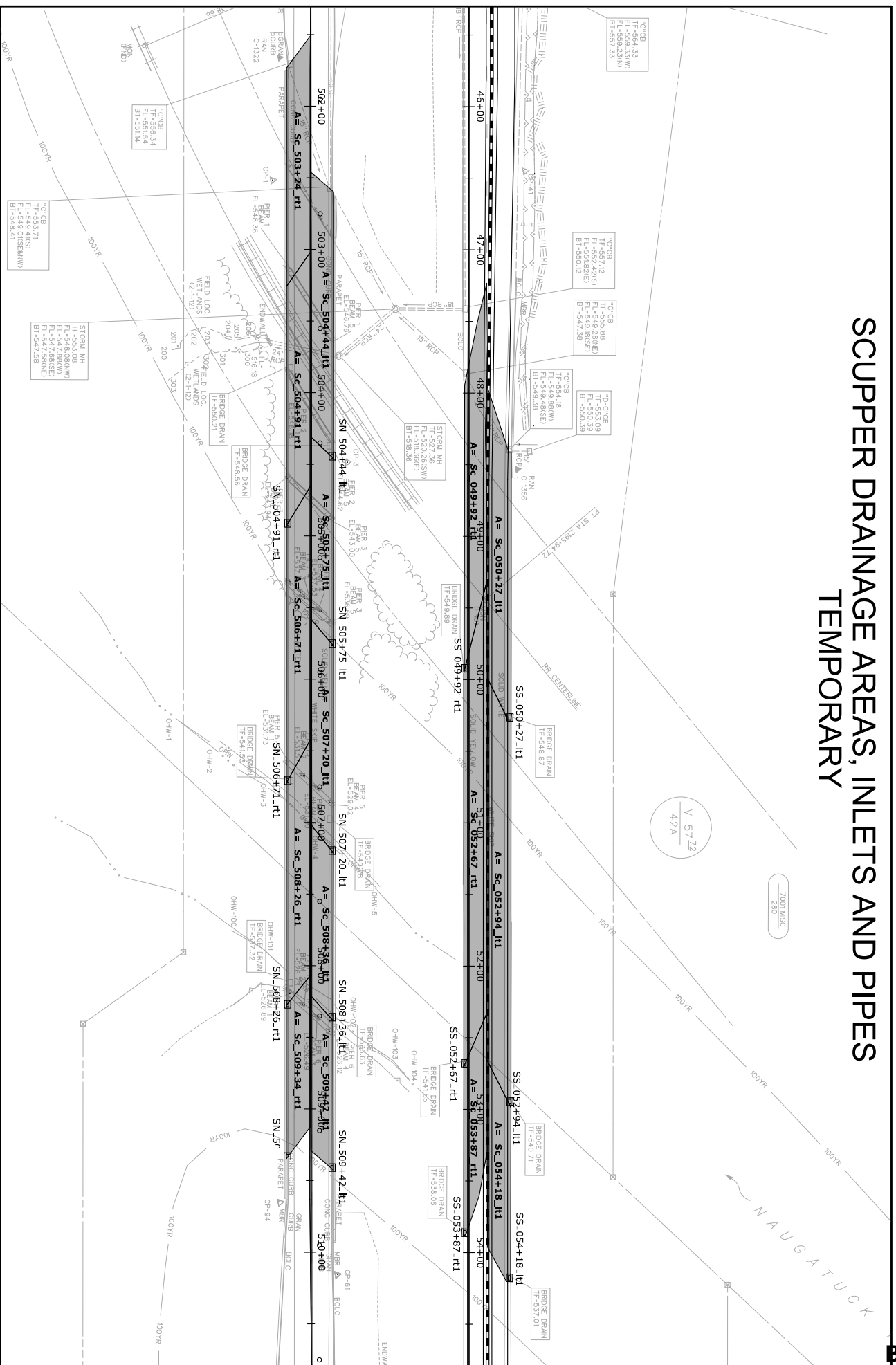


SYSTEM 3 INLETS AND PIPES TEMPORARY

MATCHMARK C-C

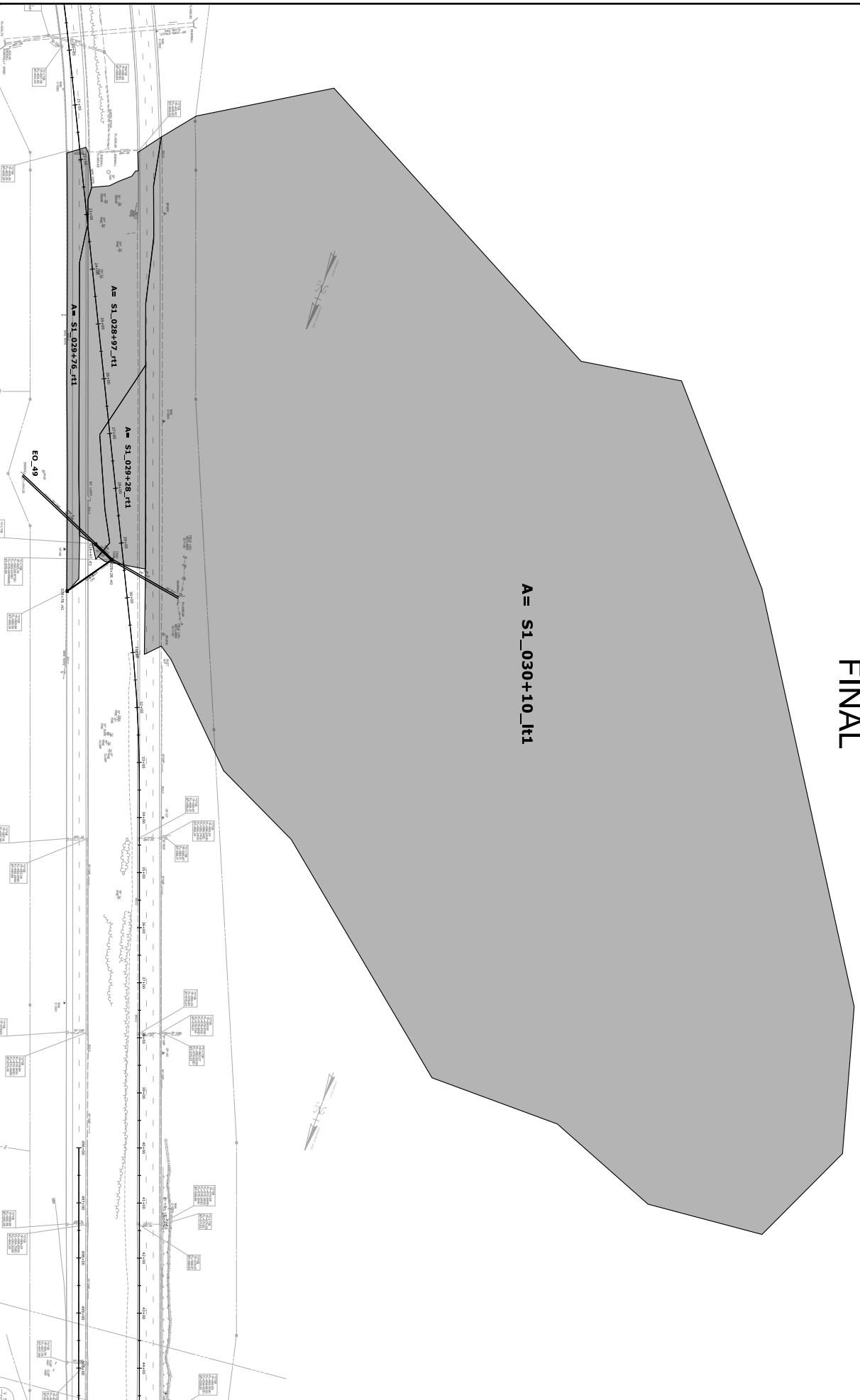


B-20

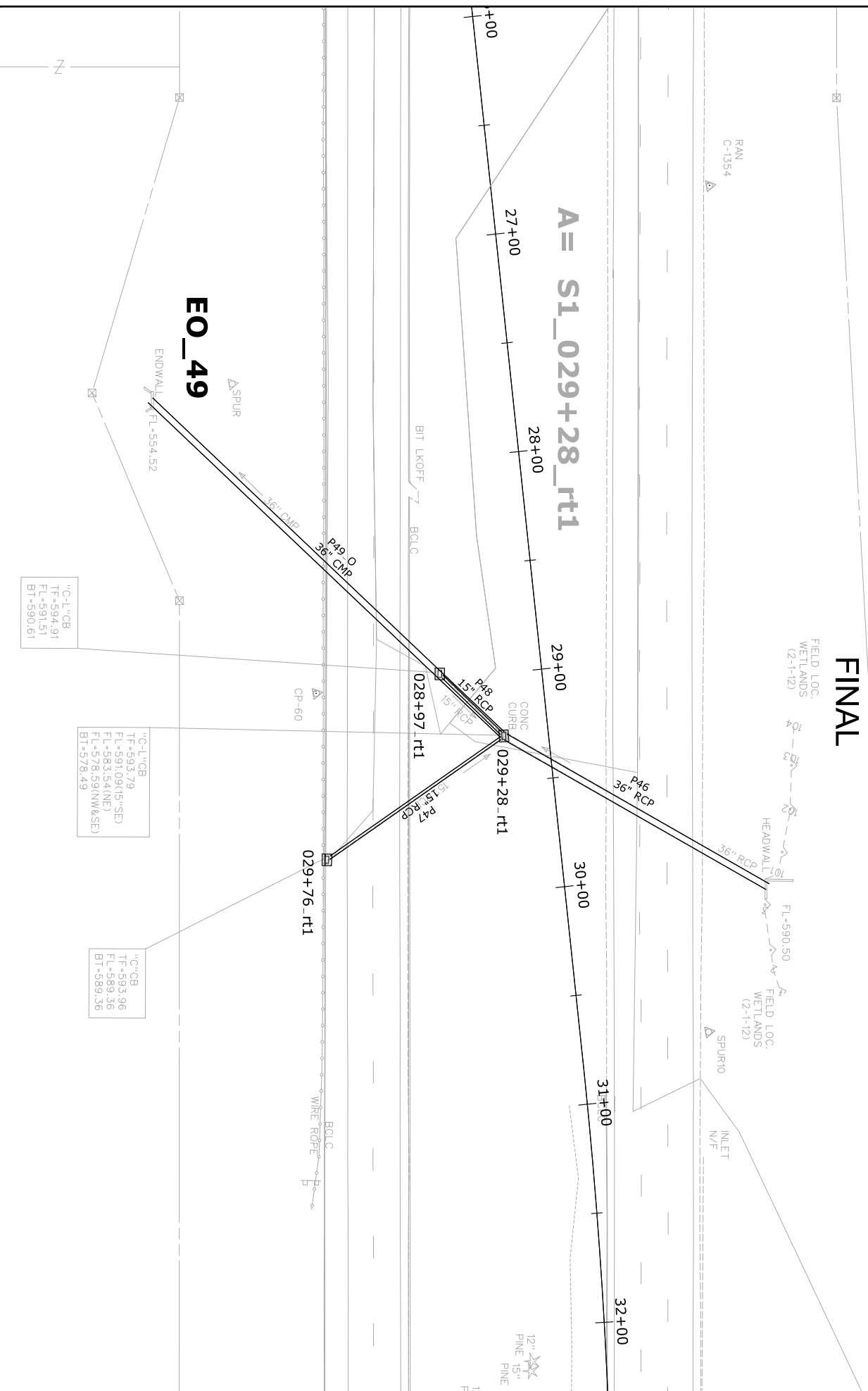


SYSTEM 1 DRAINAGE AREAS FINAL

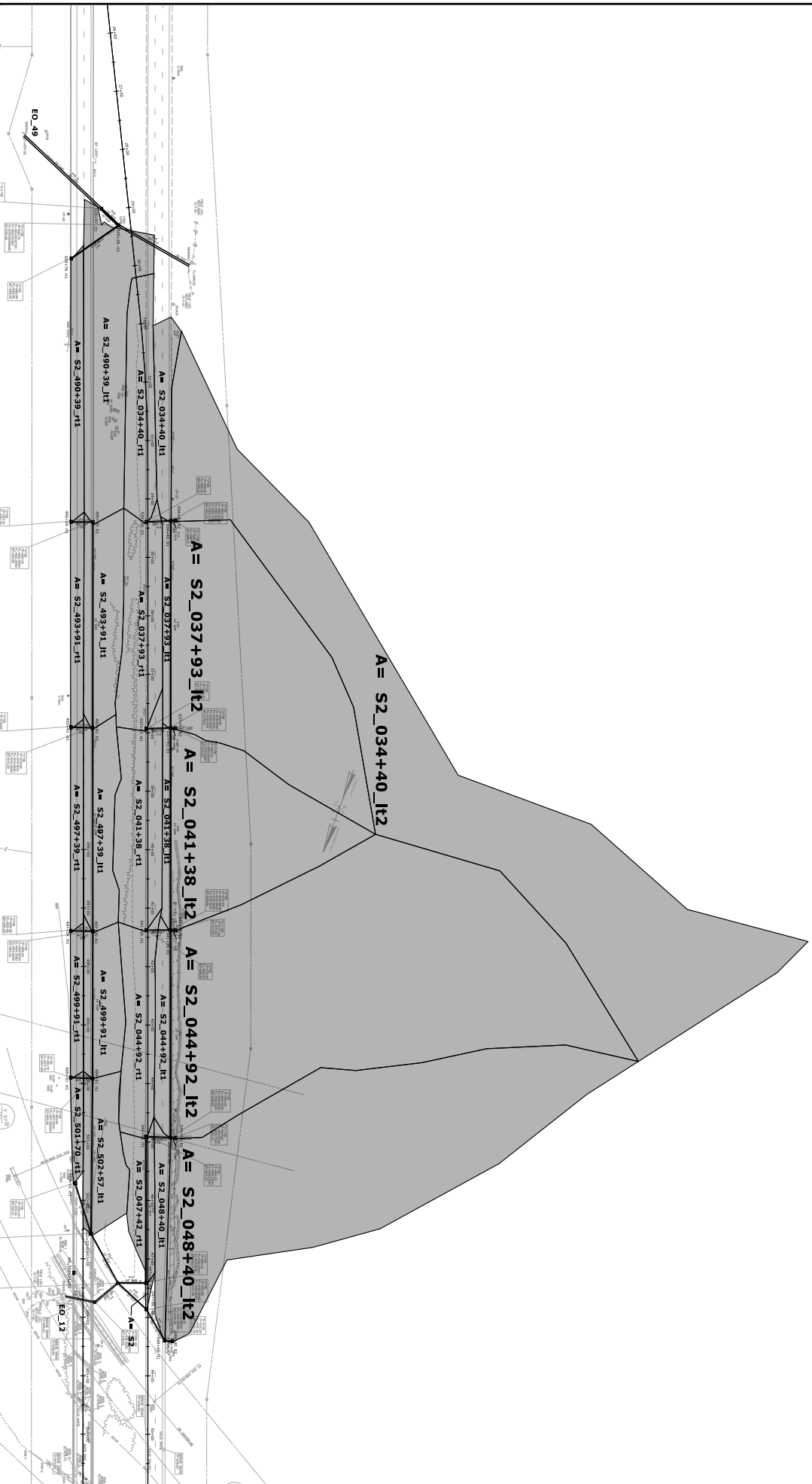
A = S1_030+10.lt1



B-22



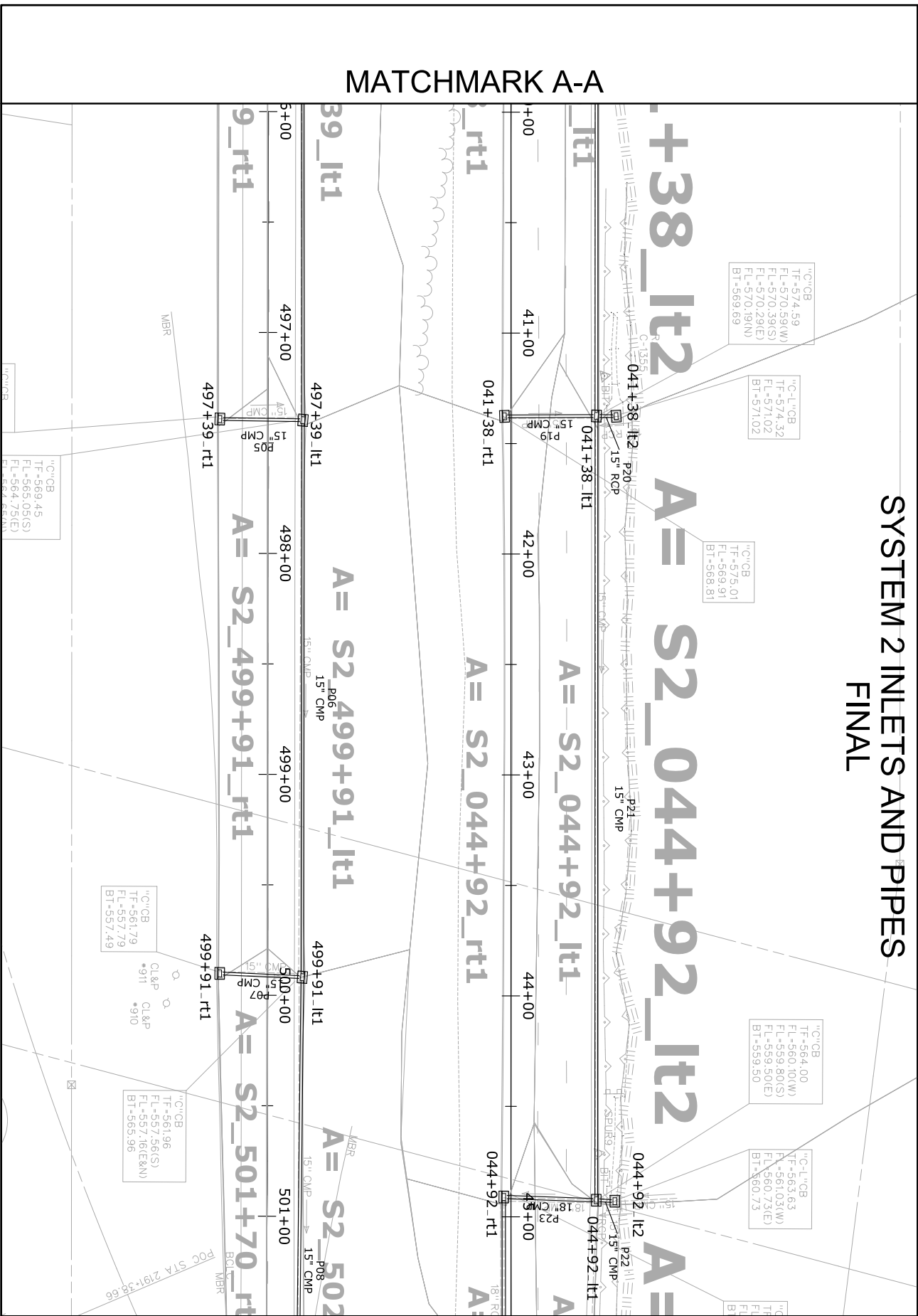
SYSTEM 2 DRAINAGE AREAS FINAL



B-24



SYSTEM 2 INLETS AND PIPES
FINAL



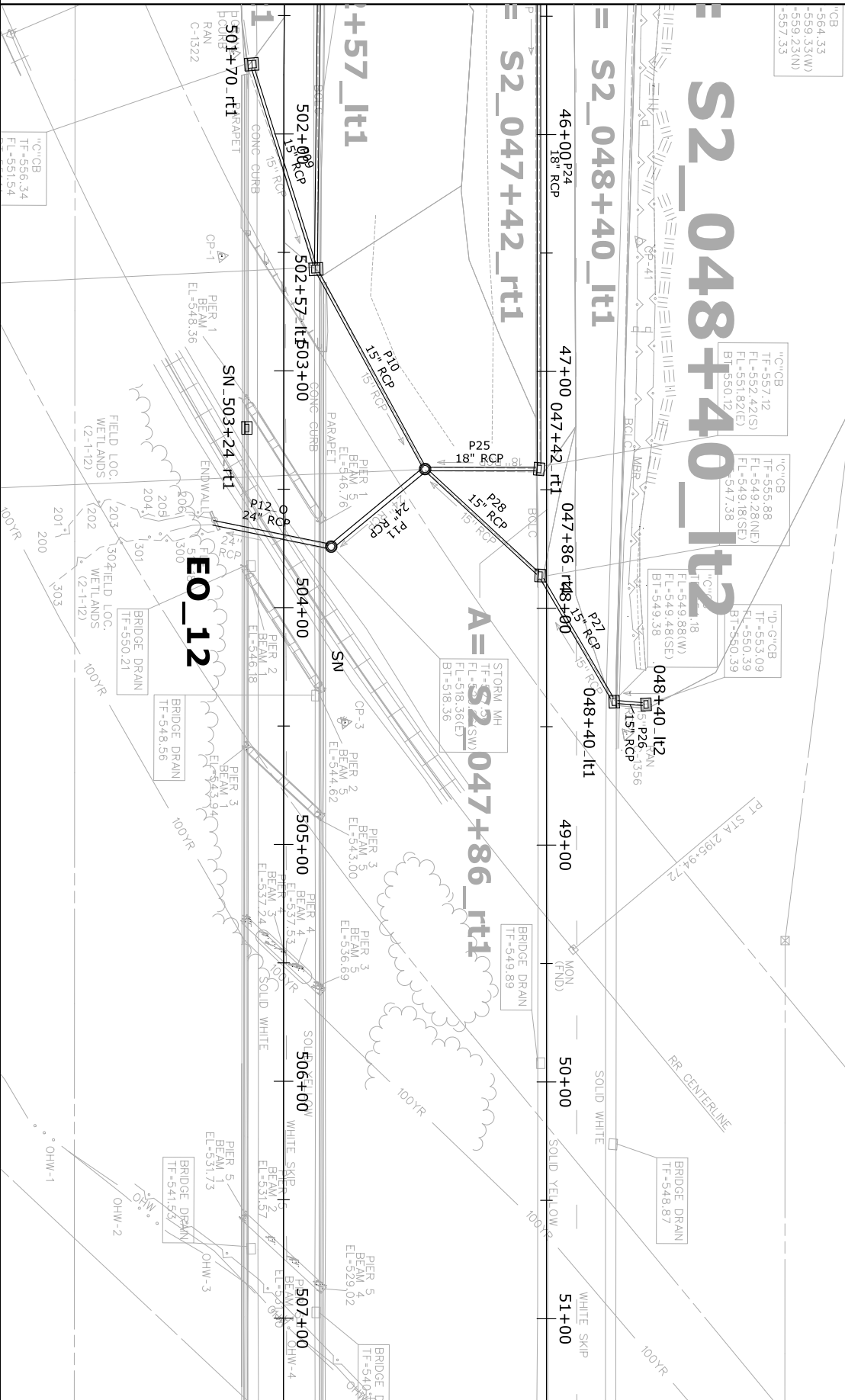
MATCHMARK A-A

MATCHMARK B-B

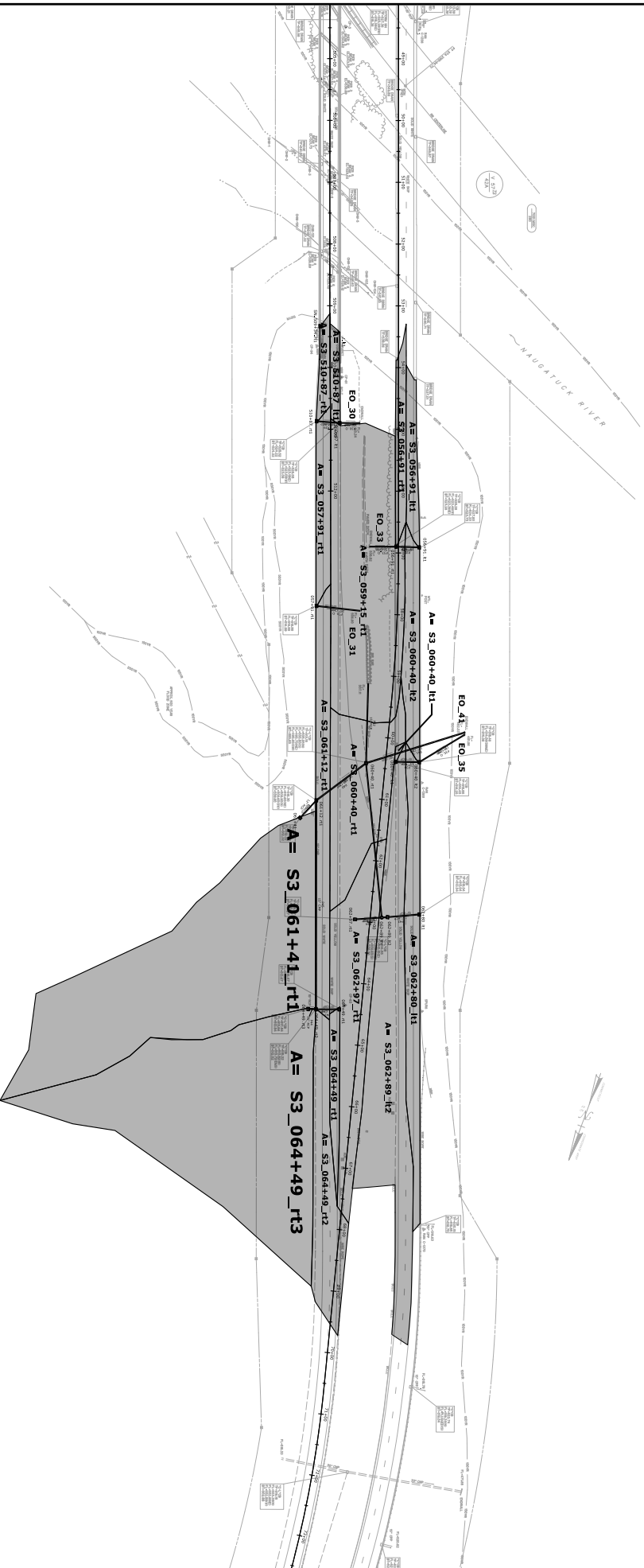
SYSTEM 2 INLETS AND PIPES FINAL

V 57.72
42A

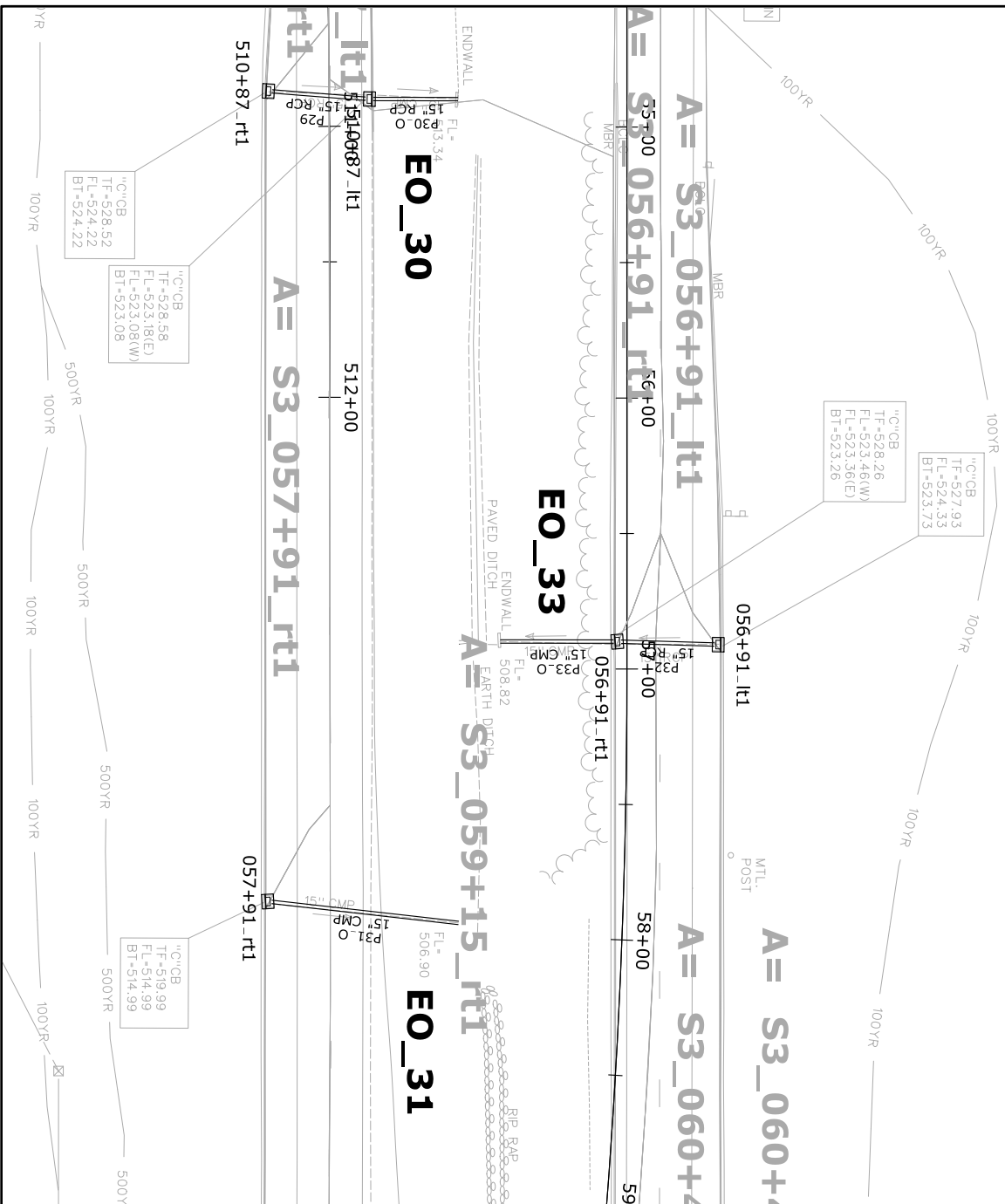
MATCHMARK B-B



SYSTEM 3 DRAINAGE AREAS FINAL

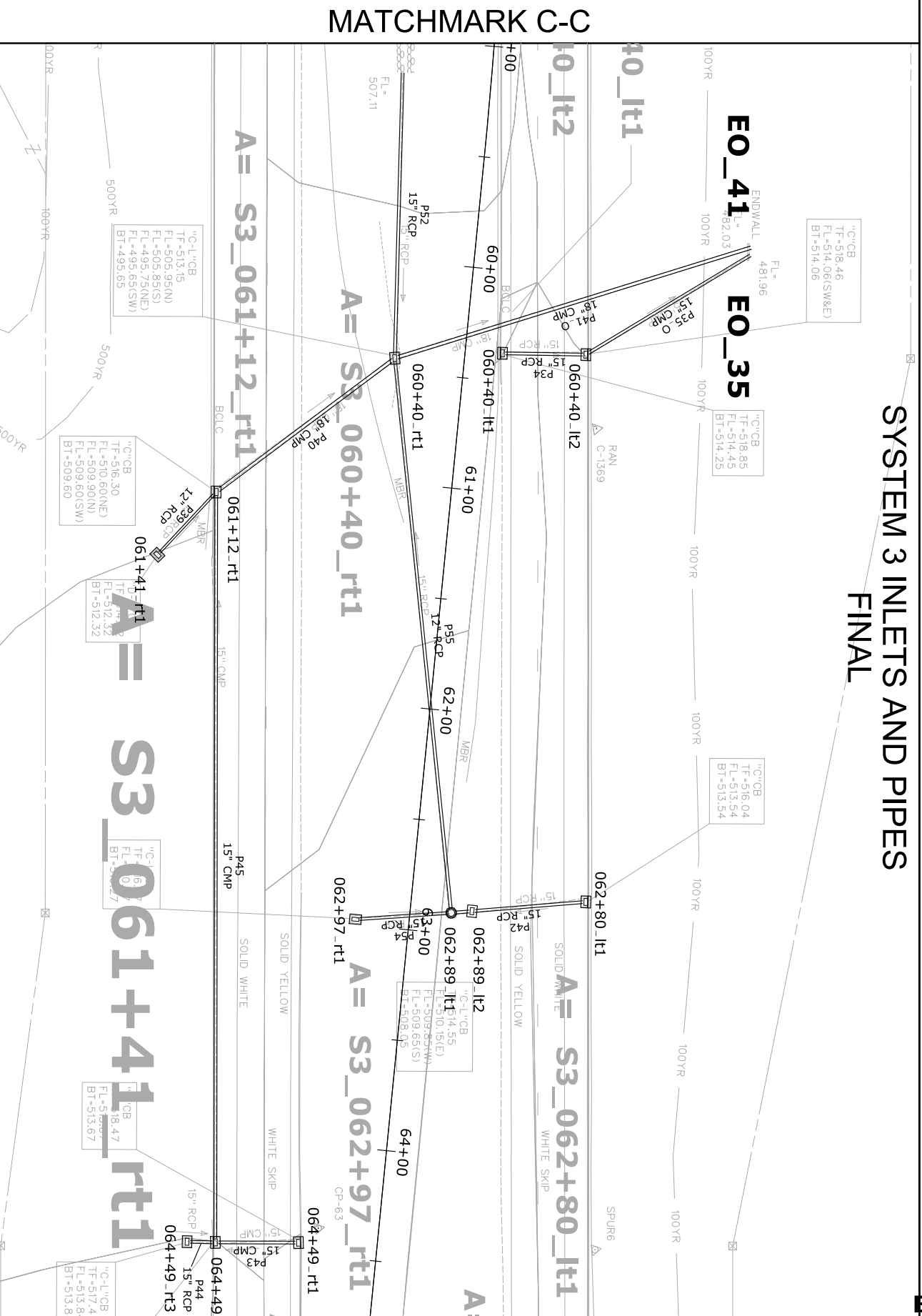


SYSTEM 3 INLETS AND PIPES FINAL

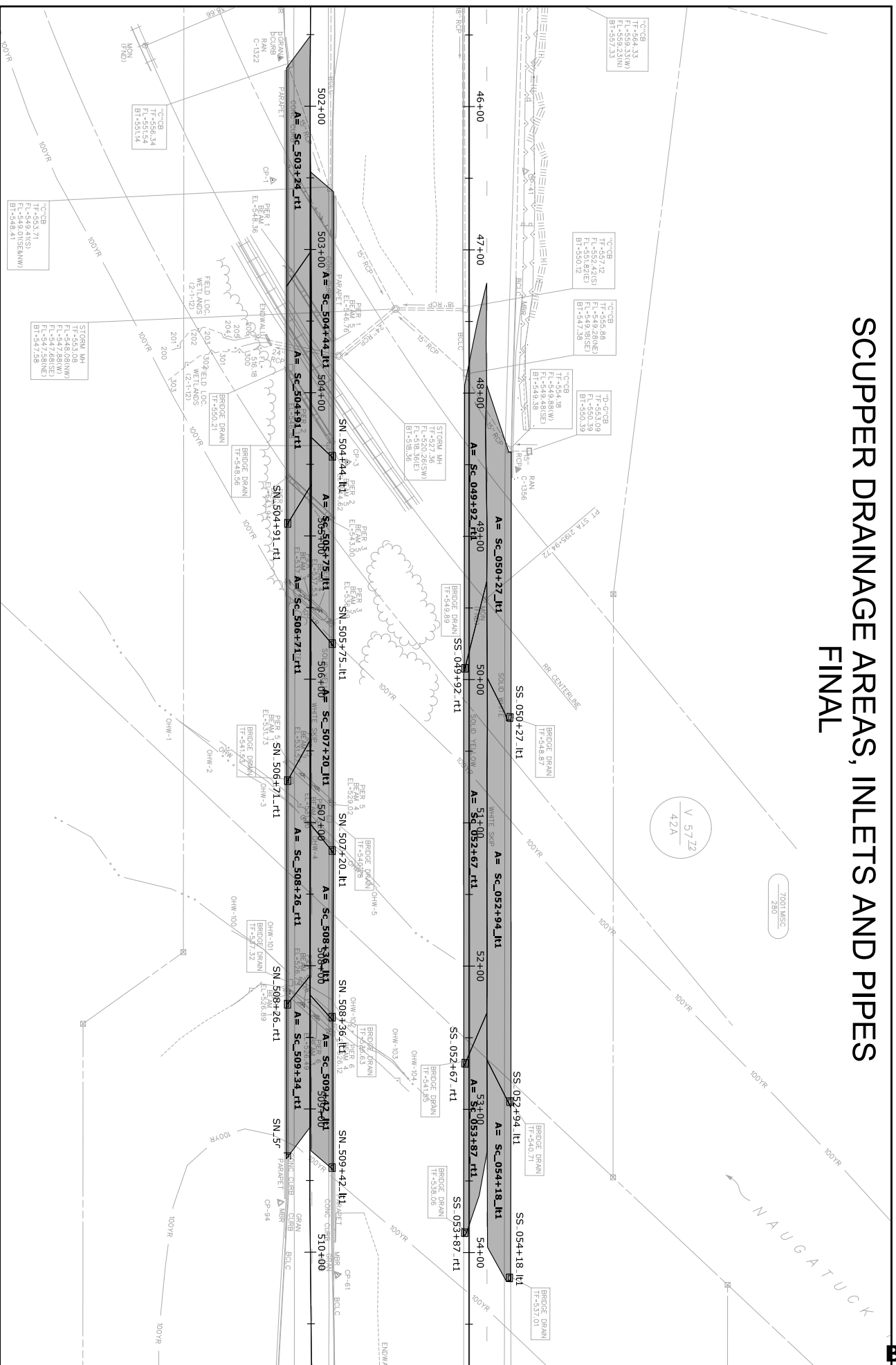


MATCHMARK C-C

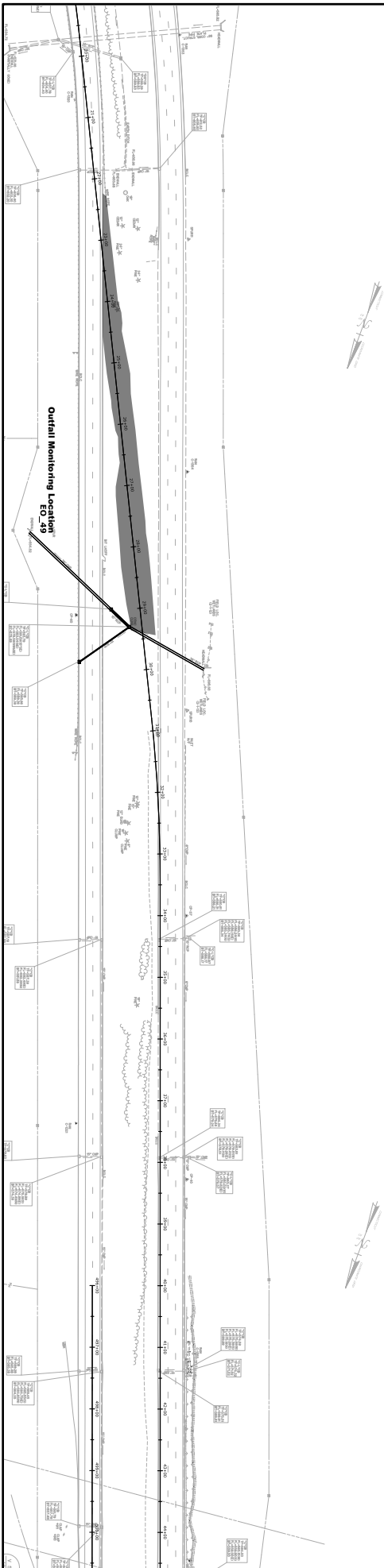
B-29



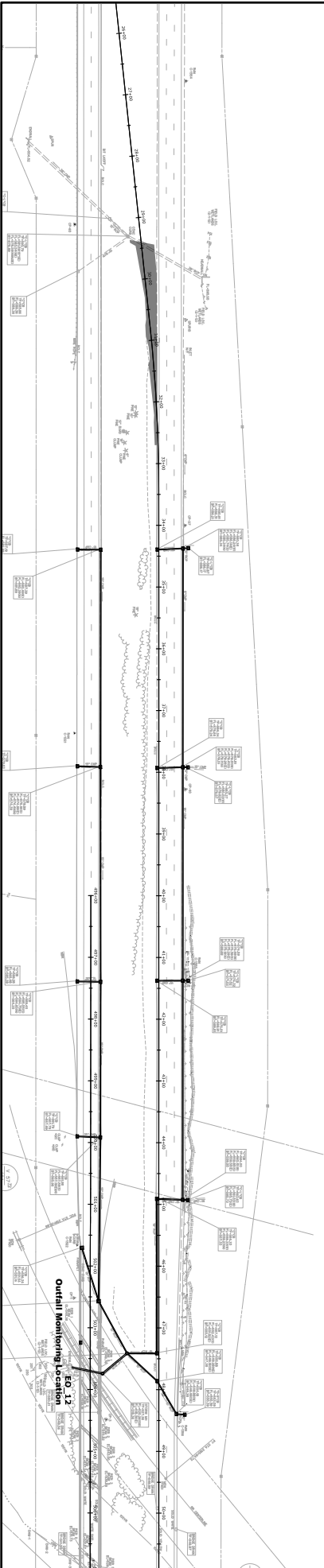
B-30



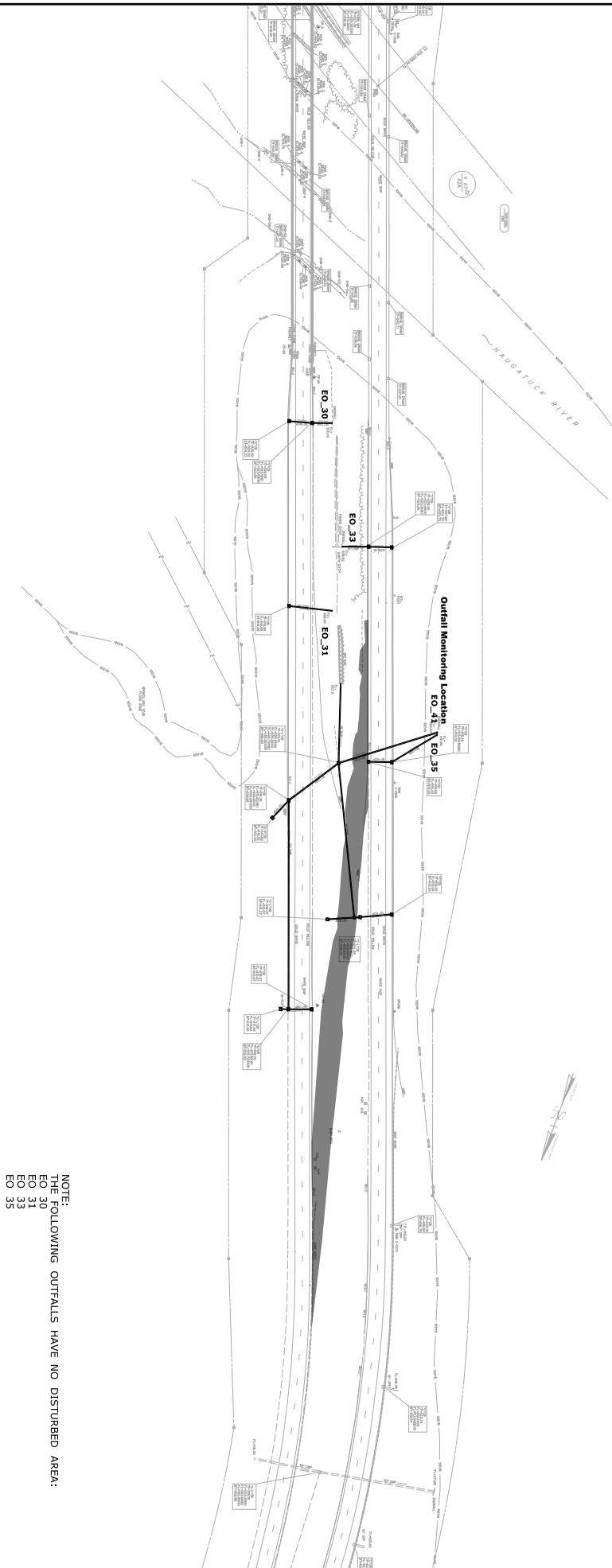
EO_49 DISTURBED AREA



EO_12 DISTURBED AREA



EO_41 DISTURBED AREA



Existing Drainage Areas						
ID	AttachTo	Area (ac)	C	Tc (min)	I (in/hr)	Peak (cfs)
S1 028+97 rt1	028+97 rt1	1.86	0.46	5	6.0	5.10
S1 029+28 rt1	029+28 rt1	0.11	0.48	5	6.0	0.32
S1 029+76 rt1	029+76 rt1	0.46	0.87	6	5.8	2.35
S1 030+10 lt1	P46	38.40	0.32	27	3.0	36.98
S2 034+40 lt1	034+40 lt1	0.24	0.83	5	6.0	1.17
S2 034+40 lt2	034+40 lt2	4.90	0.30	19	3.7	5.44
S2 034+40 rt1	034+40 rt1	0.46	0.48	8	5.3	1.17
S2 037+93 lt1	037+93 lt1	0.12	0.90	5	6.0	0.64
S2 037+93 lt2	037+93 lt2	2.43	0.30	17	3.8	2.77
S2 037+93 rt1	037+93 rt1	0.57	0.53	7	5.5	1.67
S2 041+38 lt1	041+38 lt1	0.12	0.90	5	6.0	0.63
S2 041+38 lt2	041+38 lt2	1.54	0.30	11	4.7	2.17
S2 041+38 rt1	041+38 rt1	0.62	0.52	9	5.1	1.66
S2 044+92 lt1	044+92 lt1	0.21	0.90	5	6.0	1.15
S2 044+92 lt2	044+92 lt2	5.50	0.30	18	3.8	6.27
S2 044+92 rt1	044+92 rt1	0.47	0.47	6	5.8	1.28
S2 047+42 rt1	047+42 rt1	0.24	0.53	8	5.3	0.67
S2 047+86 rt1	047+86 rt1	0.01	0.90	5	6.0	0.05
S2 048+40 lt1	048+40 lt1	0.18	0.90	5	6.0	0.95
S2 048+40 lt2	048+40 lt2	4.04	0.30	20	3.6	4.36
S2 490+39 lt1	490+39 lt1	0.93	0.44	5	6.0	2.45
S2 490+39 rt1	490+39 rt1	0.24	0.90	5	6.0	1.28
S2 493+91 lt1	493+91 lt1	0.52	0.45	6	5.8	1.35
S2 493+91 rt1	493+91 rt1	0.18	0.90	5	6.0	0.99
S2 497+39 lt1	497+39 lt1	0.46	0.47	6	5.8	1.24
S2 497+39 rt1	497+39 rt1	0.17	0.90	5	6.0	0.94
S2 499+91 lt1	499+91 lt1	0.39	0.44	5	6.0	1.03
S2 499+91 rt1	499+91 rt1	0.13	0.90	5	6.0	0.69
S2 501+70 rt1	501+70 rt1	0.08	0.90	5	6.0	0.43
S2 502+57 lt1	502+57 lt1	0.41	0.44	5	6.0	1.08
S3 056+91 lt1	056+91 lt1	0.11	0.90	5	6.0	0.60
S3 056+91 rt1	056+91 rt1	0.12	0.90	5	6.0	0.65
S3 057+91 rt1	057+91 rt1	0.16	0.90	5	6.0	0.85
S3 059+15 rt1	P52	1.14	0.39	9	5.1	2.26
S3 060+40 lt1	060+40 lt1	0.13	0.90	5	6.0	0.70
S3 060+40 lt2	060+40 lt2	0.18	0.90	5	6.0	0.97
S3 060+40 rt1	060+40 rt1	0.65	0.45	13	4.3	1.27
S3 061+12 rt1	061+12 rt1	0.37	0.90	5	6.0	1.97
S3 061+41 rt1	061+41 rt1	2.33	0.30	15	4.0	2.80
S3 062+80 lt1	062+80 lt1	0.36	0.90	5	6.0	1.97
S3 062+89 lt2	062+89 lt2	1.56	0.48	7	5.5	4.13
S3 064+49 rt1	064+49 rt1	0.09	0.90	5	6.0	0.49
S3 064+49 rt2	064+49 rt2	0.39	0.90	7	5.5	1.92
S3 064+49 rt3	064+49 rt3	2.29	0.30	18	3.8	2.61
S3 510+87 lt1	510+87 lt1	0.09	0.90	5	6.0	0.48
S3 510+87 rt1	510+87 rt1	0.11	0.90	5	6.0	0.57
Sc 049+92 rt1	SS 049+92 rt1	0.07	0.90	5	6.0	0.39
Sc 050+27 lt1	SS 050+27 lt1	0.08	0.90	5	6.0	0.41
Sc 052+67 rt1	SS 052+67 rt1	0.11	0.90	5	6.0	0.58
Sc 052+94 lt1	SS 052+94 lt1	0.10	0.90	5	6.0	0.55
Sc 053+87 rt1	SS 053+87 rt1	0.04	0.90	5	6.0	0.23
Sc 054+18 lt1	SS 054+18 lt1	0.05	0.90	5	6.0	0.26
Sc 503+83 rt1	SN 503+83 rt1	0.08	0.90	5	6.0	0.41
Sc 504+37 lt1	SN 504+37 lt1	0.06	0.90	5	6.0	0.33
Sc 506+71 rt1	SN 506+71 rt1	0.10	0.90	5	6.0	0.55
Sc 506+98 lt1	SN 506+98 lt1	0.09	0.90	5	6.0	0.48
Sc 508+12 rt1	SN 508+12 rt1	0.05	0.90	5	6.0	0.28
Sc 508+36 lt1	SN 508+36 lt1	0.05	0.90	5	6.0	0.26

Existing Drainage Inlets										
ID	Q Entering	Bypass From	Q Total	Spread	Q Bypassing	Bypass To	d	L Slope	T Slope	Type
	cfs	cfs	cfs	ft	cfs		ft	%	%	
028+97 rt1	5.10	0.00	5.10	5.63	0.00		0.55	0.0	9.7	C-L CB
029+28 rt1	0.32	0.00	0.32	3.60	0.00		0.09	0.0	2.4	C-L CB
029+76 rt1	1.22	0.00	2.35	8.31	1.13	490+39 rt1	0.21	1.8	2.5	C CB rt
034+40 lt1	0.89	0.00	1.17	4.49	0.28	037+93 lt1	0.22	1.4	4.8	C CB lt
034+40 lt2	5.44	0.00	5.44	3.53	0.00		0.57	0.0	16.2	C-L CB
034+40 rt1	0.87	0.00	1.17	4.78	0.30	037+93 rt1	0.21	1.4	4.4	C CB rt
037+93 lt1	0.73	0.28	0.92	3.66	0.19	041+38 lt1	0.18	2.4	5.0	C CB lt
037+93 lt2	2.77	0.00	2.77	9.35	0.00		0.36	0.0	3.9	C-L CB
037+93 rt1	1.31	0.30	1.97	6.08	0.66	041+38 rt1	0.25	1.3	4.2	C CB rt
041+38 lt1	0.60	0.19	0.82	4.25	0.22	044+92 lt1	0.15	2.6	3.6	C CB lt
041+38 lt2	2.17	0.00	2.17	8.94	0.00		0.31	0.0	3.5	C-L CB
041+38 rt1	1.09	0.66	2.32	8.28	1.22	044+92 rt1	0.18	2.9	2.2	C CB rt
044+92 lt1	1.15	0.22	1.37	5.46	0.22	048+40 lt1	0.32	0.4	5.8	C CB lt
044+92 lt2	6.27	0.00	6.27	4.29	0.00		0.63	0.0	14.7	C-L CB
044+92 rt1	1.67	1.22	2.50	4.70	0.83	047+42 rt1	0.27	3.0	5.7	C CB rt
047+42 rt1	0.92	0.83	1.50	6.72	0.58	047+86 rt1	0.19	1.6	2.8	C CB rt
047+86 rt1	0.50	0.58	0.63	6.92	0.13	SS 049+92 rt1	0.17	0.4	2.5	C CB rt
048+40 lt1	0.79	0.22	1.17	4.92	0.38	SS 050+27 lt1	0.17	2.6	3.5	C CB lt
048+40 lt2	4.36	0.00	4.36	1.92	0.00		0.49	0.0	25.7	C-L CB
056+91 lt1	0.78	0.31	0.91	3.14	0.13	060+40 lt2	0.22	1.7	7.0	C CB lt
056+91 rt1	0.63	0.24	0.89	9.09	0.26	060+40 lt1	0.17	0.5	1.9	C CB rt
057+91 rt1	0.87	0.16	1.01	5.50	0.15	061+12 rt1	0.27	0.3	5.0	C CB rt
060+40 lt1	0.78	0.26	0.97	3.84	0.19	060+40 rt1	0.20	1.6	5.3	C CB rt
060+40 lt2	0.64	0.13	1.10	7.36	0.46	062+80 lt1	0.15	1.7	2.0	C CB lt
060+40 rt1	1.45	0.19	1.45	1.38	0.00		0.24	0.0	17.2	C-L CB
061+12 rt1	2.81	0.84	2.81	5.65	0.00		0.37	0.0	6.5	C CB rt
061+41 rt1	2.80	0.00	2.80	5.45	0.00		0.37	0.0	6.7	C-L CB
062+80 lt1	2.44	0.48	2.44	5.89	0.00		0.34	0.0	5.7	C CB lt
062+89 lt2	4.17	0.04	4.17	7.67	0.00		0.48	0.0	6.2	C-L CB
062+97 rt1	0.00	0.00	0.00	0.00	0.00		0.00	0.0	3.9	C-L CB
064+49 rt1	0.45	0.00	0.49	2.20	0.04	062+89 lt2	0.13	6.1	5.8	C CB lt
064+49 rt2	1.22	0.00	1.92	5.55	0.69	061+12 rt1	0.22	2.3	4.0	C CB rt
064+49 rt3	2.61	0.00	2.61	8.62	0.00		0.35	0.0	4.1	C-L CB
490+39 lt1	1.14	0.00	2.45	8.90	1.31	493+91 lt1	0.19	2.4	2.1	C CB lt
490+39 rt1	1.72	1.13	2.41	5.11	0.69	493+91 rt1	0.31	1.4	6.1	C CB rt
493+91 lt1	1.37	1.31	2.66	6.88	1.29	497+39 lt1	0.21	3.5	3.0	C CB lt
493+91 rt1	1.17	0.69	1.69	4.63	0.52	497+39 rt1	0.22	2.6	4.8	C CB rt
497+39 lt1	1.44	1.29	2.52	5.84	1.09	499+91 lt1	0.22	3.8	3.8	C CB lt
497+39 rt1	1.08	0.52	1.46	4.05	0.38	499+91 rt1	0.22	2.7	5.4	C CB rt
499+91 lt1	0.99	1.09	2.12	8.65	1.12	502+57 lt1	0.17	2.6	2.0	C CB lt
499+91 rt1	0.58	0.38	1.07	7.09	0.49	501+70 rt1	0.13	2.8	1.8	C CB rt
501+70 rt1	0.60	0.49	0.92	6.70	0.32	SN 503+83 rt1	0.15	1.3	2.3	C CB rt
502+57 lt1	1.23	1.12	2.21	9.22	0.98	SN 504+37 lt1	0.23	1.1	2.4	C CB lt
510+87 lt1	0.63	0.39	0.87	3.82	0.24	P52	0.14	4.9	3.6	C CB lt
510+87 rt1	0.68	0.27	0.84	2.92	0.16	057+91 rt1	0.14	6.9	4.9	C CB rt
SN 503+83 rt1	0.42	0.32	0.74	7.36	0.32	SN 506+71 rt1	0.11	2.0	1.5	C CB rt
SN 504+37 lt1	0.64	0.98	1.31	9.11	0.67	SN 506+98 lt1	0.14	2.0	1.5	C CB lt
SN 506+71 rt1	0.46	0.32	0.87	7.43	0.40	SN 508+12 rt1	0.11	2.6	1.5	C CB rt
SN 506+98 lt1	0.57	0.67	1.15	8.32	0.58	SN 508+36 lt1	0.12	2.5	1.5	C CB lt
SN 508+12 rt1	0.42	0.40	0.69	7.83	0.27	510+87 rt1	0.12	1.2	1.5	C CB rt
SN 508+36 lt1	0.45	0.58	0.84	7.15	0.39	510+87 lt1	0.11	3.0	1.5	C CB lt
SS 049+92 rt1	0.31	0.13	0.52	5.99	0.21	SS 052+67 rt1	0.09	2.9	1.5	C CB rt
SS 050+27 lt1	0.43	0.38	0.79	7.01	0.36	SS 052+94 lt1	0.11	3.0	1.5	C CB lt
SS 052+67 rt1	0.44	0.21	0.79	7.51	0.35	SS 053+87 rt1	0.11	2.0	1.5	C CB rt
SS 052+94 lt1	0.48	0.36	0.92	7.39	0.44	SS 054+18 lt1	0.11	3.0	1.5	C CB lt
SS 053+87 rt1	0.34	0.35	0.58	6.23	0.24	056+91 rt1	0.09	2.9	1.5	C CB rt
SS 054+18 lt1	0.39	0.44	0.70	6.62	0.31	056+91 lt1	0.10	3.2	1.5	C CB lt

Existing Drainage Pipes												
Pipe ID	TC	Intensity	SumCA	TotalFlow	Capacity	Velocity	Size	n	Length	InvertIn	InvertOut	Slope
	min	in/hr	ac	cfs	cfs	ft/s	in		ft	ft	ft	%
P01	5.2	6.0	0.29	1.72	4.23	1.40	15 CMP	0.024	34.26	582.99	582.49	1.46
P02	6.6	6.0	0.48	2.85	5.00	2.32	15 CMP	0.024	348.00	582.29	575.19	2.04
P03	5.2	6.0	0.19	1.17	4.79	0.95	15 CMP	0.024	34.19	575.63	574.99	1.87
P04	7.7	5.6	0.92	5.15	5.80	4.20	15 CMP	0.024	344.07	574.49	565.05	2.74
P05	5.2	6.0	0.18	1.08	5.08	0.88	15 CMP	0.024	34.64	565.48	564.75	2.11
P06	8.4	5.4	1.36	7.32	5.92	5.96	15 CMP	0.024	248.19	564.65	557.56	2.86
P07	5.2	6.0	0.10	0.58	4.73	0.47	15 CMP	0.024	34.46	557.79	557.16	1.83
P08	9.0	5.2	1.65	8.62	6.03	7.03	15 CMP	0.024	261.34	557.16	549.41	2.97
P09	5.3	6.0	0.10	0.60	11.94	0.49	15 RCP	0.012	86.90	551.54	549.01	2.91
P10	9.2	5.1	1.99	10.15	8.43	8.27	15 RCP	0.012	91.65	549.01	547.68	1.45
P11	21.4	3.5	9.84	34.08	186.02	45.07	24 RCP	0.012	54.73	547.58	520.26	57.61
P13	19.0	3.7	1.47	5.44	2.91	4.43	15 RCP	0.012	5.78	586.25	586.24	0.17
P14	8.4	5.3	0.16	0.87	2.32	0.71	15 CMP	0.024	38.62	586.31	586.14	0.44
P15	19.7	3.7	1.83	6.76	2.51	8.61	12 CMP	0.024	350.39	585.34	579.41	1.69
P16	17.0	3.8	0.73	2.77	4.95	2.26	15 CMP	0.024	5.49	579.62	579.51	2.00
P17	7.3	5.5	0.24	1.31	3.47	1.07	15 CMP	0.024	38.55	579.64	579.26	0.99
P18	20.4	3.6	2.95	10.71	5.59	8.73	15 CMP	0.024	341.76	579.11	570.39	2.55
P19	9.8	5.1	0.21	1.09	0.56	0.89	15 CMP	0.024	38.63	570.30	570.29	0.03
P20	11.0	4.7	0.46	2.17	18.86	1.77	15 RCP	0.012	5.94	571.02	570.59	7.26
P21	20.9	3.6	3.76	13.41	6.02	10.93	15 CMP	0.024	351.13	570.19	559.80	2.96
P22	18.0	3.8	1.65	6.27	11.93	5.11	15 CMP	0.024	5.46	560.73	560.10	11.62
P23	21.0	3.5	5.64	19.79	3.76	11.20	18 CMP	0.024	38.89	559.50	559.33	0.44
P24	21.3	3.5	6.07	21.26	18.93	12.03	18 RCP	0.012	246.24	559.23	552.42	2.77
P25	21.4	3.5	6.34	21.97	33.81	20.36	18 RCP	0.012	44.80	551.82	547.88	8.83
P26	20.0	3.6	1.21	4.36	15.42	3.56	15 RCP	0.012	10.52	550.39	549.88	4.85
P27	20.3	3.6	1.41	5.06	4.14	4.12	15 RCP	0.012	57.13	549.48	549.28	0.35
P28	20.4	3.6	1.51	5.40	9.31	7.86	15 RCP	0.012	62.22	549.18	548.08	1.77
P29	5.1	6.0	0.11	0.68	12.17	5.31	15 RCP	0.012	34.42	524.22	523.18	3.02
P32	5.1	6.0	0.13	0.78	11.16	5.20	15 RCP	0.012	34.24	524.33	523.46	2.54
P34	5.2	6.0	0.13	0.78	7.47	3.93	15 RCP	0.012	34.60	514.45	514.06	1.14
P39	15.1	4.0	0.70	2.80	8.55	9.74	12 RCP	0.012	35.06	512.32	510.60	4.91
P40	19.9	3.6	2.25	8.17	21.51	11.32	18 CMP	0.024	97.93	509.60	495.75	14.29
P42	5.1	6.0	0.41	2.44	17.67	10.11	15 RCP	0.012	57.98	513.54	509.85	6.38
P43	6.2	6.0	0.07	0.45	0.60	0.37	15 CMP	0.024	34.46	513.83	513.82	0.03
P44	18.0	3.8	0.69	2.61	7.75	2.13	15 RCP	0.012	9.78	513.84	513.72	1.23
P45	19.7	3.8	1.08	4.12	3.74	3.35	15 CMP	0.024	334.17	513.72	509.90	1.14
P46	27.1	3.0	12.33	36.98	213.01	22.60	36 RCP	0.012	137.57	590.50	578.59	8.69
P47	6.2	5.8	0.21	1.22	17.31	8.14	15 RCP	0.012	95.34	589.36	583.54	6.12
P48	5.1	6.0	0.85	5.10	7.51	6.58	15 RCP	0.012	36.49	591.51	591.09	1.15
P52	9.4	5.1	0.49	4.20	7.04	5.98	15 RCP	0.012	126.66	507.11	505.83	1.01
P54	0.0	0.0	0.00	0.00	0.00	0.00	15 RCP	0.012	39.75	510.57	510.15	1.06
P55	7.4	5.5	1.17	6.41	8.45	8.16	12 RCP	0.013	247.64	509.65	495.75	5.62
P12 O	21.4	3.5	9.84	34.06	51.79	17.59	24 RCP	0.012	48.86	518.36	516.18	4.47
P30 O	5.2	6.0	0.22	1.31	39.18	14.66	15 RCP	0.012	32.57	523.08	513.34	31.34
P31 O	5.2	6.0	0.14	0.87	11.96	5.66	15 CMP	0.024	69.69	514.99	506.90	11.69
P33 O	5.2	6.0	0.24	1.41	20.69	9.60	15 CMP	0.024	44.07	523.36	508.82	34.95
P35 O	5.3	6.0	0.24	1.41	21.53	9.88	15 CMP	0.024	90.63	514.06	481.96	37.88
P41 O	20.1	3.6	4.25	17.05	16.27	9.65	18 CMP	0.024	167.06	495.65	482.03	8.18
P49 O	27.4	3.0	13.44	40.33	119.34	15.24	36 CMP	0.024	221.91	578.59	554.52	10.91

Temporary Drainage Areas						
ID	AttachTo	Area (ac)	C	Tc (min)	I (in/hr)	Peak (cfs)
S1 028+97 rt1	028+97 rt1	1.43	0.53	5	6.0	4.56
S1 029+28 rt1	029+28 rt1	0.53	0.55	11	4.7	1.39
S1 029+76 rt1	029+76 rt1	0.46	0.87	6	5.8	2.35
S1 030+10 lt1	P46	38.40	0.32	27	3.0	36.98
S2 034+40 lt1	034+40 lt1	0.24	0.83	5	6.0	1.17
S2 034+40 lt2	034+40 lt2	4.90	0.30	19	3.7	5.44
S2 034+40 rt1	034+40 rt1	0.46	0.54	8	5.3	1.32
S2 037+93 lt1	037+93 lt1	0.12	0.90	5	6.0	0.64
S2 037+93 lt2	037+93 lt2	2.43	0.30	17	3.8	2.77
S2 037+93 rt1	037+93 rt1	0.57	0.53	7	5.5	1.67
S2 041+38 lt1	041+38 lt1	0.12	0.90	5	6.0	0.63
S2 041+38 lt2	041+38 lt2	1.54	0.30	11	4.7	2.17
S2 041+38 rt1	041+38 rt1	0.62	0.52	9	5.1	1.66
S2 044+92 lt1	044+92 lt1	0.21	0.90	5	6.0	1.15
S2 044+92 lt2	044+92 lt2	5.50	0.30	18	3.8	6.27
S2 044+92 rt1	044+92 rt1	0.47	0.47	6	5.8	1.28
S2 047+42 rt1	047+42 rt1	0.24	0.53	8	5.3	0.67
S2 047+86 rt1	047+86 rt1	0.01	0.90	5	6.0	0.05
S2 048+40 lt1	048+40 lt1	0.18	0.90	5	6.0	0.95
S2 048+40 lt2	048+40 lt2	4.04	0.30	20	3.6	4.36
S2 490+39 lt1	490+39 lt1	0.93	0.58	5	6.0	3.21
S2 490+39 rt1	490+39 rt1	0.24	0.90	5	6.0	1.28
S2 493+91 lt1	493+91 lt1	0.52	0.45	6	5.8	1.35
S2 493+91 rt1	493+91 rt1	0.18	0.90	5	6.0	0.99
S2 497+39 lt1	497+39 lt1	0.46	0.47	6	5.8	1.24
S2 497+39 rt1	497+39 rt1	0.17	0.90	5	6.0	0.94
S2 499+91 lt1	499+91 lt1	0.39	0.44	5	6.0	1.03
S2 499+91 rt1	499+91 rt1	0.13	0.90	5	6.0	0.69
S2 501+70 rt1	501+70 rt1	0.08	0.90	5	6.0	0.43
S2 502+57 lt1	502+57 lt1	0.41	0.44	5	6.0	1.08
S3 056+91 lt1	056+91 lt1	0.11	0.90	5	6.0	0.60
S3 056+91 rt1	056+91 rt1	0.12	0.90	5	6.0	0.65
S3 057+91 rt1	057+91 rt1	0.16	0.90	5	6.0	0.85
S3 059+15 rt1	P52	1.22	0.43	9	5.1	2.69
S3 060+40 lt1	060+40 lt1	0.01	0.90	5	6.0	0.03
S3 060+40 lt2	060+40 lt2	0.20	0.90	5	6.0	1.09
S3 060+40 rt1	060+40 rt1	0.59	0.52	13	4.3	1.31
S3 061+12 rt1	061+12 rt1	0.37	0.90	5	6.0	1.97
S3 061+41 rt1	061+41 rt1	2.33	0.30	15	4.0	2.80
S3 062+80 lt1	062+80 lt1	0.36	0.90	5	6.0	1.97
S3 062+89 lt2	062+89 lt2	1.01	0.57	7	5.5	3.14
S3 062+97 rt1	062+97 rt1	0.65	0.56	5	6.0	2.21
S3 064+49 rt1	064+49 rt1	0.09	0.90	5	6.0	0.49
S3 064+49 rt2	064+49 rt2	0.42	0.90	7	5.5	2.07
S3 064+49 rt3	064+49 rt3	2.29	0.30	18	3.8	2.61
S3 510+87 lt1	510+87 lt1	0.05	0.90	5	6.0	0.30
S3 510+87 rt1	510+87 rt1	0.07	0.90	5	6.0	0.36
Sc 049+92 rt1	SS 049+92 rt1	0.07	0.90	5	6.0	0.39
Sc 050+27 lt1	SS 050+27 lt1	0.08	0.90	5	6.0	0.41
Sc 052+67 rt1	SS 052+67 rt1	0.11	0.90	5	6.0	0.58
Sc 052+94 lt1	SS 052+94 lt1	0.10	0.90	5	6.0	0.55
Sc 053+87 rt1	SS 053+87 rt1	0.04	0.90	5	6.0	0.23
Sc 054+18 lt1	SS 054+18 lt1	0.05	0.90	5	6.0	0.26
Sc 503+24 rt1	SN 503+24 rt1	0.06	0.90	5	6.0	0.31
Sc 504+44 lt1	SN 504+44 lt1	0.07	0.90	5	6.0	0.36
Sc 504+91 rt1	SN 504+91 rt1	0.07	0.90	5	6.0	0.35
Sc 505+75 lt1	SN 505+75 lt1	0.05	0.90	5	6.0	0.25
Sc 506+71 rt1	SN 506+71 rt1	0.07	0.90	5	6.0	0.38
Sc 507+20 lt1	SN 507+20 lt1	0.05	0.90	5	6.0	0.28
Sc 508+26 rt1	SN 508+26 rt1	0.06	0.90	5	6.0	0.33
Sc 508+36 lt1	SN 508+36 lt1	0.04	0.90	5	6.0	0.23
Sc 509+34 rt1	SN 509+34 rt1	0.04	0.90	5	6.0	0.22
Sc 509+42 lt1	SN 509+42 lt1	0.04	0.90	5	6.0	0.21

Temporary Drainage Inlets										
ID	Q Entering	Bypass From	Q Total	Spread	Q Bypassing	Bypass to	d	L Slope	T Slope	Type
	cfs	cfs	cfs	ft	cfs		ft	%	%	
028+97 rt1	4.56	0.00	4.56	5.23	0.00		0.51	0.0	9.7	C-L CB
029+28 rt1	1.39	0.00	1.39	9.59	0.00		0.23	0.0	2.4	C-L CB
029+76 rt1	1.22	0.00	2.35	8.31	1.13	490+39 rt1	0.21	1.8	2.5	C CB rt
034+40 lt1	0.89	0.00	1.17	4.49	0.28	037+93 lt1	0.22	1.4	4.8	C CB lt
034+40 lt2	5.44	0.00	5.44	3.53	0.00		0.57	0.0	16.2	C-L CB
034+40 rt1	0.96	0.00	1.32	5.00	0.36	037+93 rt1	0.22	1.4	4.4	C CB rt
037+93 lt1	0.73	0.28	0.92	3.66	0.19	041+38 lt1	0.18	2.4	5.0	C CB lt
037+93 lt2	2.77	0.00	2.77	9.35	0.00		0.36	0.0	3.9	C-L CB
037+93 rt1	1.34	0.36	2.03	6.15	0.69	041+38 rt1	0.26	1.3	4.2	C CB rt
041+38 lt1	0.60	0.19	0.82	4.25	0.22	044+92 lt1	0.15	2.6	3.6	C CB lt
041+38 lt2	2.17	0.00	2.17	8.94	0.00		0.31	0.0	3.5	C-L CB
041+38 rt1	1.10	0.69	2.35	8.32	1.24	044+92 rt1	0.18	2.9	2.2	C CB rt
044+92 lt1	1.15	0.22	1.37	5.46	0.22	048+40 lt1	0.32	0.4	5.8	C CB lt
044+92 lt2	6.27	0.00	6.27	4.29	0.00		0.63	0.0	14.7	C-L CB
044+92 rt1	1.68	1.24	2.52	4.71	0.83	047+42 rt1	0.27	3.0	5.7	C CB rt
047+42 rt1	0.92	0.83	1.51	6.73	0.59	047+86 rt1	0.19	1.6	2.8	C CB rt
047+86 rt1	0.51	0.59	0.63	6.94	0.13	SS 049+92 rt1	0.17	0.4	2.5	C CB rt
048+40 lt1	0.79	0.22	1.17	4.92	0.38	SS 050+27 lt1	0.17	2.6	3.5	C CB lt
048+40 lt2	4.36	0.00	4.36	1.92	0.00		0.49	0.0	25.7	C-L CB
056+91 lt1	0.78	0.31	0.91	3.14	0.13	060+40 lt2	0.22	1.7	7.0	C CB lt
056+91 rt1	0.63	0.24	0.89	9.09	0.26	060+40 lt1	0.17	0.5	1.9	C CB rt
057+91 rt1	0.78	0.05	0.90	5.27	0.12	061+12 rt1	0.26	0.3	5.0	C CB rt
060+40 lt1	0.27	0.26	0.29	2.46	0.02	062+89 lt2	0.13	1.6	5.3	C CB rt
060+40 lt2	0.69	0.13	1.21	7.64	0.53	062+80 lt1	0.15	1.7	2.0	C CB lt
060+40 rt1	1.32	0.00	1.31	1.29	0.00		0.22	0.0	17.2	C-L CB
061+12 rt1	2.87	0.89	2.87	5.73	0.00		0.37	0.0	6.5	C CB rt
061+41 rt1	2.80	0.00	2.80	5.45	0.00		0.37	0.0	6.7	C-L CB
062+80 lt1	2.43	0.46	2.43	5.87	0.00		0.33	0.0	5.7	C CB lt
062+89 lt2	3.34	0.19	3.33	9.44	0.00		0.41	0.0	4.4	C-L CB
062+97 rt1	2.26	0.04	2.26	8.22	0.00		0.32	0.0	3.9	C-L CB
064+49 rt1	0.45	0.00	0.49	2.20	0.04	062+97 rt1	0.13	6.1	5.8	C CB lt
064+49 rt2	1.30	0.00	2.07	5.71	0.77	061+12 rt1	0.23	2.3	4.0	C CB rt
064+49 rt3	2.61	0.00	2.61	8.62	0.00		0.35	0.0	4.1	C-L CB
490+39 lt1	1.38	0.00	3.21	9.85	1.83	493+91 lt1	0.21	2.4	2.1	C CB lt
490+39 rt1	1.72	1.13	2.41	5.11	0.69	493+91 rt1	0.31	1.4	6.1	C CB rt
493+91 lt1	1.56	1.83	3.18	7.36	1.62	497+39 lt1	0.22	3.5	3.0	C CB lt
493+91 rt1	1.17	0.69	1.69	4.63	0.52	497+39 rt1	0.22	2.6	4.8	C CB rt
497+39 lt1	1.57	1.62	2.86	6.12	1.28	499+91 lt1	0.23	3.8	3.8	C CB lt
497+39 rt1	1.08	0.52	1.46	4.05	0.38	499+91 rt1	0.22	2.7	5.4	C CB rt
499+91 lt1	1.06	1.28	2.32	8.95	1.26	502+57 lt1	0.18	2.6	2.0	C CB lt
499+91 rt1	0.58	0.38	1.07	7.09	0.49	501+70 rt1	0.13	2.8	1.8	C CB rt
501+70 rt1	0.75	0.49	0.92	6.70	0.18	SN 503+24 rt1	0.15	1.3	2.3	C DBL I rt
502+57 lt1	1.63	1.26	2.34	9.42	0.71	SN 504+44 lt1	0.23	1.1	2.4	C DBL I lt
510+87 lt1	0.32	0.09	0.38	2.81	0.06	P52	0.10	4.9	3.6	C CB lt
510+87 rt1	0.42	0.12	0.47	2.36	0.05	057+91 rt1	0.12	6.9	4.9	C CB rt
SN 503+24 rt1	0.33	0.18	0.49	4.88	0.16	SN 504+91 rt1	0.10	3.0	2.0	C CB rt
SN 504+44 lt1	0.57	0.65	1.01	6.40	0.43	SN 505+75 lt1	0.13	3.0	2.0	C CB lt
SN 504+91 rt1	0.34	0.16	0.51	4.96	0.17	SN 506+71 rt1	0.10	3.0	2.0	C CB rt
SN 505+75 lt1	0.43	0.43	0.68	5.53	0.26	SN 507+20 lt1	0.11	3.0	2.0	C CB lt
SN 506+71 rt1	0.36	0.17	0.55	5.09	0.19	SN 508+26 rt1	0.10	3.0	2.0	C CB rt
SN 507+20 lt1	0.36	0.26	0.54	5.06	0.18	SN 508+36 lt1	0.10	3.0	2.0	C CB lt
SN 508+26 rt1	0.35	0.19	0.52	4.99	0.17	SN 509+34 rt1	0.10	3.0	2.0	C CB rt
SN 508+36 lt1	0.29	0.18	0.42	4.59	0.12	SN 509+42 lt1	0.09	3.0	2.0	C CB lt
SN 509+34 rt1	0.28	0.17	0.39	4.50	0.12	510+87 rt1	0.09	3.0	2.0	C CB rt
SN 509+42 lt1	0.24	0.12	0.33	4.21	0.09	510+87 lt1	0.08	3.0	2.0	C CB lt
SS 049+92 rt1	0.31	0.13	0.52	5.99	0.21	SS 052+67 rt1	0.09	2.9	1.5	C CB rt
SS 050+27 lt1	0.43	0.38	0.79	7.01	0.36	SS 052+94 lt1	0.11	3.0	1.5	C CB lt
SS 052+67 rt1	0.44	0.21	0.79	7.51	0.35	SS 053+87 rt1	0.11	2.0	1.5	C CB rt
SS 052+94 lt1	0.48	0.36	0.92	7.39	0.44	SS 054+18 lt1	0.11	3.0	1.5	C CB lt
SS 053+87 rt1	0.34	0.35	0.58	6.23	0.24	056+91 rt1	0.09	2.9	1.5	C CB rt
SS 054+18 lt1	0.39	0.44	0.70	6.62	0.31	056+91 lt1	0.10	3.2	1.5	C CB lt

Temporary Drainage Pipes												
Pipe ID	TC	Intensity	SumCA	TotalFlow	Capacity	Velocity	Size	n	Length	InvertIn	InvertOut	Slope
	min	in/hr	ac	cfs	cfs	ft/s	in		ft	ft	ft	%
P01	5.2	6.0	0.29	1.72	4.23	1.40	15 CMP	0.024	34.26	582.99	582.49	1.46
P02	6.6	6.0	0.52	3.09	5.00	2.52	15 CMP	0.024	348.00	582.29	575.19	2.04
P03	5.2	6.0	0.19	1.17	4.79	0.95	15 CMP	0.024	34.19	575.63	574.99	1.87
P04	7.6	5.6	0.99	5.57	5.80	4.54	15 CMP	0.024	344.07	574.49	565.05	2.74
P05	5.2	6.0	0.18	1.08	5.08	0.88	15 CMP	0.024	34.64	565.48	564.75	2.11
P06	8.3	5.4	1.46	7.86	5.92	6.40	15 CMP	0.024	248.19	564.65	557.56	2.86
P07	5.2	6.0	0.10	0.58	4.73	0.47	15 CMP	0.024	34.46	557.79	557.16	1.83
P08	8.9	5.2	1.76	9.23	6.03	7.52	15 CMP	0.024	261.38	557.16	549.41	2.97
P09	5.3	6.0	0.12	0.75	11.94	0.61	15 RCP	0.012	86.57	551.54	549.02	2.91
P10	9.1	5.1	2.20	11.29	8.43	9.20	15 RCP	0.012	91.96	549.01	547.68	1.45
P11	21.4	3.5	10.08	34.93	186.02	45.33	24 RCP	0.012	54.73	547.58	520.26	57.61
P13	19.0	3.7	1.47	5.44	2.91	4.43	15 RCP	0.012	5.78	586.25	586.24	0.17
P14	8.4	5.3	0.18	0.96	2.32	0.78	15 CMP	0.024	38.62	586.31	586.14	0.44
P15	19.7	3.7	1.85	6.83	2.51	8.69	12 CMP	0.024	350.39	585.34	579.41	1.69
P16	17.0	3.8	0.73	2.77	4.95	2.26	15 CMP	0.024	5.49	579.62	579.51	2.00
P17	7.3	5.5	0.24	1.34	3.47	1.09	15 CMP	0.024	38.55	579.64	579.26	0.99
P18	20.4	3.6	2.97	10.79	5.59	8.79	15 CMP	0.024	341.76	579.11	570.39	2.55
P19	9.8	5.1	0.22	1.10	0.56	0.90	15 CMP	0.024	38.63	570.30	570.29	0.03
P20	11.0	4.7	0.46	2.17	18.86	1.77	15 RCP	0.012	5.94	571.02	570.59	7.26
P21	20.9	3.6	3.79	13.50	6.02	11.00	15 CMP	0.024	351.13	570.19	559.80	2.96
P22	18.0	3.8	1.65	6.27	11.93	5.11	15 CMP	0.024	5.46	560.73	560.10	11.62
P23	21.0	3.5	5.67	19.88	3.76	11.25	18 CMP	0.024	38.89	559.50	559.33	0.44
P24	21.3	3.5	6.10	21.37	18.93	12.09	18 RCP	0.012	246.24	559.23	552.42	2.77
P25	21.4	3.5	6.37	22.08	33.81	20.38	18 RCP	0.012	44.80	551.82	547.88	8.83
P26	20.0	3.6	1.21	4.36	15.42	3.56	15 RCP	0.012	10.52	550.39	549.88	4.85
P27	20.3	3.6	1.41	5.06	4.14	4.12	15 RCP	0.012	57.13	549.48	549.28	0.35
P28	20.4	3.6	1.51	5.40	9.31	7.86	15 RCP	0.012	62.22	549.18	548.08	1.77
P29	5.1	6.0	0.07	0.42	12.17	4.63	15 RCP	0.012	34.42	524.22	523.18	3.02
P32	5.1	6.0	0.13	0.78	11.16	5.20	15 RCP	0.012	34.24	524.33	523.46	2.54
P34	5.2	6.0	0.05	0.27	7.47	2.88	15 RCP	0.012	34.60	514.45	514.06	1.14
P39	15.1	4.0	0.70	2.80	8.55	9.74	12 RCP	0.012	35.06	512.32	510.60	4.91
P40	19.8	3.6	2.28	8.29	21.51	4.69	18 CMP	0.024	97.93	509.60	495.75	14.29
P42	5.1	6.0	0.40	2.43	17.68	10.06	15 RCP	0.012	48.54	513.54	510.45	6.38
P43	6.2	6.0	0.07	0.45	0.60	0.37	15 CMP	0.024	34.46	513.83	513.82	0.03
P44	18.0	3.8	0.69	2.61	7.75	2.13	15 RCP	0.012	9.78	513.84	513.72	1.23
P45	19.7	3.8	1.10	4.19	3.74	3.42	15 CMP	0.024	334.17	513.72	509.90	1.14
P46	27.1	3.0	12.33	36.98	213.01	22.60	36 RCP	0.012	137.57	590.50	578.59	8.69
P47	6.2	5.8	0.21	1.22	17.31	8.14	15 RCP	0.012	95.34	589.36	583.54	6.12
P48	5.1	6.0	0.76	4.56	7.51	6.41	15 RCP	0.012	36.49	591.51	591.09	1.15
P52	9.4	5.1	0.54	4.45	7.04	6.06	15 RCP	0.012	126.66	507.11	505.83	1.01
P53	7.0	5.5	1.01	5.56	22.37	15.12	15 RCP	0.012	5.90	510.45	509.85	10.22
P54	5.1	6.0	0.38	2.26	7.20	5.18	15 RCP	0.012	39.25	510.57	510.15	1.06
P55	7.5	5.5	1.39	7.63	8.57	7.89	15 RCP	0.012	247.28	509.65	505.94	1.50
P12 O	21.4	3.5	10.08	34.91	51.79	17.69	24 RCP	0.012	48.86	518.36	516.18	4.47
P30 O	5.2	6.0	0.12	0.74	39.18	12.32	15 RCP	0.012	32.57	523.08	513.34	31.34
P31 O	5.2	6.0	0.13	0.78	11.96	5.49	15 CMP	0.024	69.69	514.99	506.90	11.69
P33 O	5.2	6.0	0.24	1.41	20.69	9.60	15 CMP	0.024	44.07	523.36	508.82	34.95
P35 O	5.4	6.0	0.16	0.96	21.53	8.81	15 CMP	0.024	90.63	514.06	481.96	37.88
P41 O	20.1	3.6	4.51	18.02	16.27	10.20	18 CMP	0.024	167.06	495.65	482.03	8.18
P49 O	27.4	3.0	13.59	40.78	119.34	15.28	36 CMP	0.024	221.91	578.59	554.52	10.91

Final Drainage Areas						
ID	AttachTo	Area (ac)	C	Tc (min)	I (in/hr)	Peak (cfs)
S1 028+97 rt1	028+97 rt1	1.43	0.47	5	6.0	4.02
S1 029+28 rt1	029+28 rt1	0.53	0.43	11	4.7	1.09
S1 029+76 rt1	029+76 rt1	0.46	0.87	6	5.8	2.35
S1 030+10 lt1	P46	38.40	0.32	27	3.0	36.98
S2 034+40 lt1	034+40 lt1	0.24	0.83	5	6.0	1.17
S2 034+40 lt2	034+40 lt2	4.90	0.30	19	3.7	5.44
S2 034+40 rt1	034+40 rt1	0.46	0.48	8	5.3	1.17
S2 037+93 lt1	037+93 lt1	0.12	0.90	5	6.0	0.64
S2 037+93 lt2	037+93 lt2	2.43	0.30	17	3.8	2.77
S2 037+93 rt1	037+93 rt1	0.57	0.53	7	5.5	1.67
S2 041+38 lt1	041+38 lt1	0.12	0.90	5	6.0	0.63
S2 041+38 lt2	041+38 lt2	1.54	0.30	11	4.7	2.17
S2 041+38 rt1	041+38 rt1	0.62	0.52	9	5.1	1.66
S2 044+92 lt1	044+92 lt1	0.21	0.90	5	6.0	1.15
S2 044+92 lt2	044+92 lt2	5.50	0.30	18	3.8	6.27
S2 044+92 rt1	044+92 rt1	0.47	0.47	6	5.8	1.28
S2 047+42 rt1	047+42 rt1	0.24	0.53	8	5.3	0.67
S2 047+86 rt1	047+86 rt1	0.01	0.90	5	6.0	0.05
S2 048+40 lt1	048+40 lt1	0.18	0.90	5	6.0	0.95
S2 048+40 lt2	048+40 lt2	4.04	0.30	20	3.6	4.36
S2 490+39 lt1	490+39 lt1	0.93	0.44	5	6.0	2.45
S2 490+39 rt1	490+39 rt1	0.24	0.90	5	6.0	1.28
S2 493+91 lt1	493+91 lt1	0.52	0.45	6	5.8	1.35
S2 493+91 rt1	493+91 rt1	0.18	0.90	5	6.0	0.99
S2 497+39 lt1	497+39 lt1	0.46	0.47	6	5.8	1.24
S2 497+39 rt1	497+39 rt1	0.17	0.90	5	6.0	0.94
S2 499+91 lt1	499+91 lt1	0.39	0.44	5	6.0	1.03
S2 499+91 rt1	499+91 rt1	0.13	0.90	5	6.0	0.69
S2 501+70 rt1	501+70 rt1	0.08	0.90	5	6.0	0.43
S2 502+57 lt1	502+57 lt1	0.41	0.44	5	6.0	1.08
S3 056+91 lt1	056+91 lt1	0.11	0.90	5	6.0	0.60
S3 056+91 rt1	056+91 rt1	0.12	0.90	5	6.0	0.65
S3 057+91 rt1	057+91 rt1	0.16	0.90	5	6.0	0.85
S3 059+15 rt1	P52	1.14	0.39	9	5.1	2.26
S3 060+40 lt1	060+40 lt1	0.13	0.90	5	6.0	0.70
S3 060+40 lt2	060+40 lt2	0.18	0.90	5	6.0	0.97
S3 060+40 rt1	060+40 rt1	0.56	0.42	13	4.3	1.03
S3 061+12 rt1	061+12 rt1	0.37	0.90	5	6.0	1.97
S3 061+41 rt1	061+41 rt1	2.33	0.30	15	4.0	2.80
S3 062+80 lt1	062+80 lt1	0.36	0.90	5	6.0	1.97
S3 062+89 lt2	062+89 lt2	1.01	0.57	7	5.5	3.14
S3 062+97 rt1	062+97 rt1	0.65	0.36	5	6.0	1.40
S3 064+49 rt1	064+49 rt1	0.09	0.90	5	6.0	0.49
S3 064+49 rt2	064+49 rt2	0.42	0.85	7	5.5	1.96
S3 064+49 rt3	064+49 rt3	2.29	0.30	18	3.8	2.61
S3 510+87 lt1	510+87 lt1	0.05	0.90	5	6.0	0.30
S3 510+87 rt1	510+87 rt1	0.07	0.90	5	6.0	0.36
Sc 049+92 rt1	SS 049+92 rt1	0.07	0.90	5	6.0	0.39
Sc 050+27 lt1	SS 050+27 lt1	0.08	0.90	5	6.0	0.41
Sc 052+67 rt1	SS 052+67 rt1	0.11	0.90	5	6.0	0.58
Sc 052+94 lt1	SS 052+94 lt1	0.10	0.90	5	6.0	0.55
Sc 053+87 rt1	SS 053+87 rt1	0.04	0.90	5	6.0	0.23
Sc 054+18 lt1	SS 054+18 lt1	0.05	0.90	5	6.0	0.26
Sc 503+24 rt1	SN 503+24 rt1	0.06	0.90	5	6.0	0.31
Sc 504+44 lt1	SN 504+44 lt1	0.07	0.90	5	6.0	0.36
Sc 504+91 rt1	SN 504+91 rt1	0.07	0.90	5	6.0	0.35
Sc 505+75 lt1	SN 505+75 lt1	0.05	0.90	5	6.0	0.25
Sc 506+71 rt1	SN 506+71 rt1	0.07	0.90	5	6.0	0.38
Sc 507+20 lt1	SN 507+20 lt1	0.05	0.90	5	6.0	0.28
Sc 508+26 rt1	SN 508+26 rt1	0.06	0.90	5	6.0	0.33
Sc 508+36 lt1	SN 508+36 lt1	0.04	0.90	5	6.0	0.23
Sc 509+34 rt1	SN 509+34 rt1	0.04	0.90	5	6.0	0.22
Sc 509+42 lt1	SN 509+42 lt1	0.04	0.90	5	6.0	0.21

Final Drainage Inlets										
ID	Q Entering	Bypass From	Q Total	Spread	Q Bypassing	Bypass to	d	L Slope	T Slope	Type
	cfs	cfs	cfs	ft	cfs		ft	%	%	
028+97 rt1	4.02	0.00	4.02	4.80	0.00		0.47	0.0	9.7	C-L CB
029+28 rt1	1.09	0.00	1.09	8.15	0.00		0.20	0.0	2.4	C-L CB
029+76 rt1	1.22	0.00	2.35	8.31	1.13	490+39 rt1	0.21	1.8	2.5	C CB rt
034+40 lt1	0.89	0.00	1.17	4.49	0.28	037+93 lt1	0.22	1.4	4.8	C CB lt
034+40 lt2	5.44	0.00	5.44	3.53	0.00		0.57	0.0	16.2	C-L CB
034+40 rt1	0.87	0.00	1.17	4.78	0.30	037+93 rt1	0.21	1.4	4.4	C CB rt
037+93 lt1	0.73	0.28	0.92	3.66	0.19	041+38 lt1	0.18	2.4	5.0	C CB lt
037+93 lt2	2.77	0.00	2.77	9.35	0.00		0.36	0.0	3.9	C-L CB
037+93 rt1	1.31	0.30	1.97	6.08	0.66	041+38 rt1	0.25	1.3	4.2	C CB rt
041+38 lt1	0.60	0.19	0.82	4.25	0.22	044+92 lt1	0.15	2.6	3.6	C CB lt
041+38 lt2	2.17	0.00	2.17	8.94	0.00		0.31	0.0	3.5	C-L CB
041+38 rt1	1.09	0.66	2.32	8.28	1.22	044+92 rt1	0.18	2.9	2.2	C CB rt
044+92 lt1	1.15	0.22	1.37	5.46	0.22	048+40 lt1	0.32	0.4	5.8	C CB lt
044+92 lt2	6.27	0.00	6.27	4.29	0.00		0.63	0.0	14.7	C-L CB
044+92 rt1	1.67	1.22	2.50	4.70	0.83	047+42 rt1	0.27	3.0	5.7	C CB rt
047+42 rt1	0.92	0.83	1.50	6.72	0.58	047+86 rt1	0.19	1.6	2.8	C CB rt
047+86 rt1	0.50	0.58	0.63	6.92	0.13	SS 049+92 rt1	0.17	0.4	2.5	C CB rt
048+40 lt1	0.79	0.22	1.17	4.92	0.38	SS 050+27 lt1	0.17	2.6	3.5	C CB lt
048+40 lt2	4.36	0.00	4.36	1.92	0.00		0.49	0.0	25.7	C-L CB
056+91 lt1	0.78	0.31	0.91	3.14	0.13	060+40 lt2	0.22	1.7	7.0	C CB lt
056+91 rt1	0.63	0.24	0.89	9.09	0.26	060+40 lt1	0.17	0.5	1.9	C CB rt
057+91 rt1	0.78	0.05	0.90	5.27	0.12	061+12 rt1	0.26	0.3	5.0	C CB rt
060+40 lt1	0.78	0.26	0.97	3.84	0.19	062+89 lt2	0.20	1.6	5.3	C CB rt
060+40 lt2	0.64	0.13	1.10	7.36	0.46	062+80 lt1	0.15	1.7	2.0	C CB lt
060+40 rt1	1.03	0.00	1.03	1.10	0.00		0.19	0.0	17.2	C-L CB
061+12 rt1	2.81	0.83	2.81	5.65	0.00		0.37	0.0	6.5	C CB rt
061+41 rt1	2.80	0.00	2.80	5.45	0.00		0.37	0.0	6.7	C-L CB
062+80 lt1	2.43	0.46	2.43	5.87	0.00		0.33	0.0	5.7	C CB lt
062+89 lt2	3.34	0.20	3.34	9.45	0.00		0.41	0.0	4.4	C-L CB
062+97 rt1	1.44	0.04	1.44	6.11	0.00		0.24	0.0	3.9	C-L CB
064+49 rt1	0.45	0.00	0.49	2.20	0.04	062+97 rt1	0.13	6.1	5.8	C CB lt
064+49 rt2	1.24	0.00	1.96	5.59	0.71	061+12 rt1	0.23	2.3	4.0	C CB rt
064+49 rt3	2.61	0.00	2.61	8.62	0.00		0.35	0.0	4.1	C-L CB
490+39 lt1	1.14	0.00	2.45	8.90	1.31	493+91 lt1	0.19	2.4	2.1	C CB lt
490+39 rt1	1.72	1.13	2.41	5.11	0.69	493+91 rt1	0.31	1.4	6.1	C CB rt
493+91 lt1	1.37	1.31	2.66	6.88	1.29	497+39 lt1	0.21	3.5	3.0	C CB lt
493+91 rt1	1.17	0.69	1.69	4.63	0.52	497+39 rt1	0.22	2.6	4.8	C CB rt
497+39 lt1	1.44	1.29	2.52	5.84	1.09	499+91 lt1	0.22	3.8	3.8	C CB lt
497+39 rt1	1.08	0.52	1.46	4.05	0.38	499+91 rt1	0.22	2.7	5.4	C CB rt
499+91 lt1	0.99	1.09	2.12	8.65	1.12	502+57 lt1	0.17	2.6	2.0	C CB lt
499+91 rt1	0.58	0.38	1.07	7.09	0.49	501+70 rt1	0.13	2.8	1.8	C CB rt
501+70 rt1	0.75	0.49	0.92	6.70	0.18	SN 503+24 rt1	0.15	1.3	2.3	C DBL I rt
502+57 lt1	1.56	1.12	2.21	9.22	0.65	SN 504+44 lt1	0.23	1.1	2.4	C DBL I lt
510+87 lt1	0.32	0.09	0.38	2.81	0.06	P52	0.10	4.9	3.6	C CB lt
510+87 rt1	0.42	0.12	0.47	2.36	0.05	057+91 rt1	0.12	6.9	4.9	C CB rt
SN 503+24 rt1	0.33	0.18	0.49	4.88	0.16	SN 504+91 rt1	0.10	3.0	2.0	C CB rt
SN 504+44 lt1	0.57	0.65	1.01	6.40	0.43	SN 505+75 lt1	0.13	3.0	2.0	C CB lt
SN 504+91 rt1	0.34	0.16	0.51	4.96	0.17	SN 506+71 rt1	0.10	3.0	2.0	C CB rt
SN 505+75 lt1	0.43	0.43	0.68	5.53	0.26	SN 507+20 lt1	0.11	3.0	2.0	C CB lt
SN 506+71 rt1	0.36	0.17	0.55	5.09	0.19	SN 508+26 rt1	0.10	3.0	2.0	C CB rt
SN 507+20 lt1	0.36	0.26	0.54	5.06	0.18	SN 508+36 lt1	0.10	3.0	2.0	C CB lt
SN 508+26 rt1	0.35	0.19	0.52	4.99	0.17	SN 509+34 rt1	0.10	3.0	2.0	C CB rt
SN 508+36 lt1	0.29	0.18	0.42	4.59	0.12	SN 509+42 lt1	0.09	3.0	2.0	C CB lt
SN 509+34 rt1	0.28	0.17	0.39	4.50	0.12	510+87 rt1	0.09	3.0	2.0	C CB rt
SN 509+42 lt1	0.24	0.12	0.33	4.21	0.09	510+87 lt1	0.08	3.0	2.0	C CB lt
SS 049+92 rt1	0.31	0.13	0.52	5.99	0.21	SS 052+67 rt1	0.09	2.9	1.5	C CB rt
SS 050+27 lt1	0.43	0.38	0.79	7.01	0.36	SS 052+94 lt1	0.11	3.0	1.5	C CB lt
SS 052+67 rt1	0.44	0.21	0.79	7.51	0.35	SS 053+87 rt1	0.11	2.0	1.5	C CB rt
SS 052+94 lt1	0.48	0.36	0.92	7.39	0.44	SS 054+18 lt1	0.11	3.0	1.5	C CB lt
SS 053+87 rt1	0.34	0.35	0.58	6.23	0.24	056+91 rt1	0.09	2.9	1.5	C CB rt
SS 054+18 lt1	0.39	0.44	0.70	6.62	0.31	056+91 lt1	0.10	3.2	1.5	C CB lt

Final Drainage Pipes												
Pipe ID	TC	Intensity	SumCA	TotalFlow	Capacity	Velocity	Size	n	Length	InvertIn	InvertOut	Slope
	min	in/hr	ac	cfs	cfs	ft/s	in		ft	ft	ft	%
P01	5.2	6.0	0.29	1.72	4.23	1.40	15 CMP	0.024	34.26	582.99	582.49	1.46
P02	6.6	6.0	0.48	2.85	5.00	2.32	15 CMP	0.024	348.00	582.29	575.19	2.04
P03	5.2	6.0	0.19	1.17	4.79	0.95	15 CMP	0.024	34.19	575.63	574.99	1.87
P04	7.7	5.6	0.92	5.15	5.80	4.20	15 CMP	0.024	344.07	574.49	565.05	2.74
P05	5.2	6.0	0.18	1.08	5.08	0.88	15 CMP	0.024	34.64	565.48	564.75	2.11
P06	8.4	5.4	1.36	7.32	5.92	5.96	15 CMP	0.024	248.19	564.65	557.56	2.86
P07	5.2	6.0	0.10	0.58	4.73	0.47	15 CMP	0.024	34.46	557.79	557.16	1.83
P08	9.0	5.2	1.65	8.62	6.03	7.03	15 CMP	0.024	261.38	557.16	549.41	2.97
P09	5.3	6.0	0.12	0.75	11.94	0.61	15 RCP	0.012	86.57	551.54	549.02	2.91
P10	9.2	5.1	2.08	10.61	8.43	8.64	15 RCP	0.012	91.96	549.01	547.68	1.45
P11	21.4	3.5	9.93	34.39	186.02	45.15	24 RCP	0.012	54.73	547.58	520.26	57.61
P13	19.0	3.7	1.47	5.44	2.91	4.43	15 RCP	0.012	5.78	586.25	586.24	0.17
P14	8.4	5.3	0.16	0.87	2.32	0.71	15 CMP	0.024	38.62	586.31	586.14	0.44
P15	19.7	3.7	1.83	6.77	2.51	8.61	12 CMP	0.024	350.39	585.34	579.41	1.69
P16	17.0	3.8	0.73	2.77	4.95	2.26	15 CMP	0.024	5.49	579.62	579.51	2.00
P17	7.3	5.5	0.24	1.31	3.47	1.07	15 CMP	0.024	38.55	579.64	579.26	0.99
P18	20.4	3.6	2.95	10.71	5.59	8.73	15 CMP	0.024	341.76	579.11	570.39	2.55
P19	9.8	5.1	0.21	1.09	0.56	0.89	15 CMP	0.024	38.63	570.30	570.29	0.03
P20	11.0	4.7	0.46	2.17	18.86	1.77	15 RCP	0.012	5.94	571.02	570.59	7.26
P21	20.9	3.6	3.76	13.41	6.02	10.93	15 CMP	0.024	351.13	570.19	559.80	2.96
P22	18.0	3.8	1.65	6.27	11.93	5.11	15 CMP	0.024	5.46	560.73	560.10	11.62
P23	21.0	3.5	5.64	19.79	3.76	11.20	18 CMP	0.024	38.89	559.50	559.33	0.44
P24	21.3	3.5	6.07	21.27	18.93	12.03	18 RCP	0.012	246.24	559.23	552.42	2.77
P25	21.4	3.5	6.34	21.97	33.81	20.36	18 RCP	0.012	44.80	551.82	547.88	8.83
P26	20.0	3.6	1.21	4.36	15.42	3.56	15 RCP	0.012	10.52	550.39	549.88	4.85
P27	20.3	3.6	1.41	5.06	4.14	4.12	15 RCP	0.012	57.13	549.48	549.28	0.35
P28	20.4	3.6	1.51	5.40	9.31	7.86	15 RCP	0.012	62.22	549.18	548.08	1.77
P29	5.1	6.0	0.07	0.42	12.17	4.63	15 RCP	0.012	34.42	524.22	523.18	3.02
P32	5.1	6.0	0.13	0.78	11.16	5.20	15 RCP	0.012	34.24	524.33	523.46	2.54
P34	5.2	6.0	0.13	0.78	7.47	3.93	15 RCP	0.012	34.60	514.45	514.06	1.14
P39	15.1	4.0	0.70	2.80	8.55	9.74	12 RCP	0.012	35.06	512.32	510.60	4.91
P40	19.9	3.6	2.26	8.19	21.51	11.34	18 CMP	0.024	97.93	509.60	495.75	14.29
P42	5.1	6.0	0.40	2.43	17.68	10.06	15 RCP	0.012	48.54	513.54	510.45	6.38
P43	6.2	6.0	0.07	0.45	0.60	0.37	15 CMP	0.024	34.46	513.83	513.82	0.03
P44	18.0	3.8	0.69	2.61	7.75	2.13	15 RCP	0.012	9.78	513.84	513.72	1.23
P45	19.7	3.8	1.09	4.14	3.74	3.37	15 CMP	0.024	334.17	513.72	509.90	1.14
P46	27.1	3.0	12.33	36.98	213.01	22.60	36 RCP	0.012	137.57	590.50	578.59	8.69
P47	6.2	5.8	0.21	1.22	17.31	8.14	15 RCP	0.012	95.34	589.36	583.54	6.12
P48	5.1	6.0	0.85	5.10	7.51	6.58	15 RCP	0.012	36.49	591.51	591.09	1.15
P52	9.4	5.1	0.45	4.02	7.04	5.91	15 RCP	0.012	126.66	507.11	505.83	1.01
P53	7.0	5.5	1.01	5.57	22.37	15.13	15 RCP	0.012	5.90	510.45	509.85	10.22
P54	5.2	6.0	0.24	1.44	7.20	4.58	15 RCP	0.012	39.25	510.57	510.15	1.06
P55	7.6	5.5	1.25	6.89	8.57	7.76	15 RCP	0.012	247.28	509.65	505.94	1.50
P12 O	21.4	3.5	9.93	34.37	51.79	17.62	24 RCP	0.012	48.86	518.36	516.18	4.47
P30 O	5.2	6.0	0.12	0.74	39.18	12.32	15 RCP	0.012	32.57	523.08	513.34	31.34
P31 O	5.2	6.0	0.13	0.78	11.96	5.49	15 CMP	0.024	69.69	514.99	506.90	11.69
P33 O	5.2	6.0	0.24	1.41	20.69	9.60	15 CMP	0.024	44.07	523.36	508.82	34.95
P35 O	5.3	6.0	0.24	1.41	21.53	9.88	15 CMP	0.024	90.63	514.06	481.96	37.88
P41 O	20.1	3.6	4.20	16.89	16.27	9.56	18 CMP	0.024	167.06	495.65	482.03	8.18
P49 O	27.4	3.0	13.44	40.33	119.34	15.24	36 CMP	0.024	221.91	578.59	554.52	10.91

Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT 073-0182 Rehab of Bridge No. 00608

DATE 4/14/2015

SUBJECT Water Quality Flow Calculation

PREPARED BY STEPHEN HALL

CHECKED BY

SYSTEM 1 TEMPORARY CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S1_028+97 rt1	0.555	1.43
S1_029+28 rt1	0.246	0.53
S1_029+76 rt1	0.458	0.46
S1_030+10 lt1	1.353	38.40

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 1 P49-O

Area (A) = 40.82 acres
Area (A) = 0.06378 square miles
Design Precipitation (P) = 1 inch
% Impervious Cover (I) = 6.40
Volumetric Runoff Coefficient (R) = 0.108

WQV = 0.366 ac-ft

WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) = 0.108 inches
CN = 82 Figure 2-1 (SWQM)

TIME OF CONCENTRATION (Tc), 10 minute minimum

Tc = 27.4 min
Tc = 0.46 hours

Initial Abstraction (I_a) = 0.469 Table 4-1 (SWQM)

I_a/P Calculation = 0.469

Unit Peak Discharge (q_u) = 220 Exhibit 4-111 (SWQM)

WQF = 1.51 cfs

Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT 073-0182 Rehab of Bridge No. 00608
 DATE 4/14/2015
 SUBJECT Water Quality Flow Calculation

PREPARED BY STEPHEN HALL
 CHECKED BY

SYSTEM 2 TEMPORARY CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S2 034+40 lt1	0.207	0.24
S2 034+40 lt2	0.000	4.90
S2 034+40 rt1	0.185	0.46
S2 037+93 lt1	0.119	0.12
S2 037+93 lt2	0.000	2.43
S2 037+93 rt1	0.220	0.57
S2 041+38 lt1	0.117	0.12
S2 041+38 lt2	0.000	1.54
S2 041+38 rt1	0.231	0.62
S2 044+92 lt1	0.212	0.21
S2 044+92 lt2	0.000	5.50
S2 044+92 rt1	0.131	0.47
S2 047+42 rt1	0.093	0.24
S2 047+86 rt1	0.010	0.01
S2 048+40 lt1	0.176	0.18
S2 048+40 lt2	0.000	4.04
S2 490+39 lt1	0.246	0.93
S2 490+39 rt1	0.237	0.24
S2 493+91 lt1	0.129	0.52
S2 493+91 rt1	0.184	0.18
S2 497+39 lt1	0.127	0.46
S2 497+39 rt1	0.175	0.17
S2 499+91 lt1	0.092	0.39
S2 499+91 rt1	0.127	0.13
S2 501+70 rt1	0.080	0.08
S2 502+57 lt1	0.096	0.41

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 2 P12-O

Area (A) = 25.16 acres
 Area (A) = 0.03931 square miles
 Design Precipitation (P) = 1 inch
 % Impervious Cover (I) = 12.69
 Volumetric Runoff Coefficient (R) = 0.164

WQV =	0.344	ac-ft
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WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) = 0.164 inches
 CN = 85 Figure 2-1 (SWQM)

TIME OF CONCENTRATION (Tc), 10 minute minimum

Tc = 21.4 min
 Tc = 0.36 hours

Initial Abstraction (I_a) = 0.381 Table 4-1 (SWQM)

I_a/P Calculation = 0.381

Unit Peak Discharge (q_u) = 325 Exhibit 4-111 (SWQM)

WQF =	2.10	cfs
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Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT 073-0182 Rehab of Bridge No. 00608
 DATE 4/14/2015
 SUBJECT Water Quality Flow Calculation

PREPARED BY STEPHEN HALL
 CHECKED BY

SYSTEM 3 TEMPORARY CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S3 056+91 lt1	0.111	0.11
S3 056+91 rt1	0.121	0.12
S3 057+91 rt1	0.158	0.16
S3 059+15 rt1	0.268	1.14
S3 060+40 lt1	0.006	0.13
S3 060+40 lt2	0.201	0.18
S3 060+40 rt1	0.223	0.56
S3 061+12 rt1	0.365	0.37
S3 061+41 rt1	0.000	2.33
S3 062+80 lt1	0.364	0.36
S3 062+89 lt2	0.448	1.01
S3 062+97 rt1	0.287	0.65
S3 064+49 rt1	0.091	0.09
S3 064+49 rt2	0.418	0.42
S3 064+49 rt3	0.000	2.29
S3 510+87 lt1	0.050	0.05
S3 510+87 rt1	0.070	0.07

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 3 P35-O/P41-O

Area (A) = 10.04 acres
 Area (A) = 0.01569 square miles
 Design Precipitation (P) = 1 inch
 % Impervious Cover (I) = 31.69
 Volumetric Runoff Coefficient (R) = 0.335

WQV =	0.280	ac-ft
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WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) = 0.335 inches
 CN = 90 Figure 2-1 (SWQM)

TIME OF CONCENTRATION (Tc), 10 minute minimum

Tc = 20.1 min
 Tc = 0.34 hours

Initial Abstraction (I_a) = 0.222 Table 4-1 (SWQM)
 I_a/P Calculation = 0.222
 Unit Peak Discharge (q_u) = 450 Exhibit 4-111 (SWQM)

WQF =	2.37	cfs
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Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT 073-0182 Rehab of Bridge No. 00608

DATE 4/14/2015

SUBJECT Water Quality Flow Calculation

PREPARED BY STEPHEN HALL

CHECKED BY

SYSTEM 1 FINAL CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S1_028+97 rt1	0.403	1.43
S1_029+28 rt1	0.119	0.53
S1_029+76 rt1	0.458	0.46
S1_030+10 lt1	1.353	38.40

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 1 P49-O

Area (A) = 40.82 acres
Area (A) = 0.06378 square miles
Design Precipitation (P) = 1 inch
% Impervious Cover (I) = 5.72
Volumetric Runoff Coefficient (R) = 0.101

WQV = 0.345 ac-ft

WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) = 0.101 inches
CN = 81 Figure 2-1 (SWQM)

TIME OF CONCENTRATION (Tc), 10 minute minimum

Tc = 27.4 min
Tc = 0.46 hours

Initial Abstraction (I_a) = 0.469 Table 4-1 (SWQM)

I_a/P Calculation = 0.469

Unit Peak Discharge (q_u) = 220 Exhibit 4-111 (SWQM)

WQF = 1.42 cfs

Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT	073-0182 Rehab of Bridge No. 00608
DATE	4/14/2015
SUBJECT	Water Quality Flow Calculation
PREPARED BY	STEPHEN HALL
CHECKED BY	

SYSTEM 2 FINAL CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S2 034+40 lt1	0.207	0.24
S2 034+40 lt2	0.000	4.90
S2 034+40 rt1	0.139	0.46
S2 037+93 lt1	0.119	0.12
S2 037+93 lt2	0.000	2.43
S2 037+93 rt1	0.220	0.57
S2 041+38 lt1	0.117	0.12
S2 041+38 lt2	0.000	1.54
S2 041+38 rt1	0.231	0.62
S2 044+92 lt1	0.212	0.21
S2 044+92 lt2	0.000	5.50
S2 044+92 rt1	0.131	0.47
S2 047+42 rt1	0.093	0.24
S2 047+86 rt1	0.010	0.01
S2 048+40 lt1	0.176	0.18
S2 048+40 lt2	0.000	4.04
S2 490+39 lt1	0.216	0.93
S2 490+39 rt1	0.237	0.24
S2 493+91 lt1	0.129	0.52
S2 493+91 rt1	0.184	0.18
S2 497+39 lt1	0.127	0.46
S2 497+39 rt1	0.175	0.17
S2 499+91 lt1	0.092	0.39
S2 499+91 rt1	0.127	0.13
S2 501+70 rt1	0.080	0.08
S2 502+57 lt1	0.096	0.41

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 2 P12-O

Area (A) =	25.16	acres
Area (A) =	0.03931	square miles
Design Precipitation (P) =	1	inch
% Impervious Cover (I) =	12.39	
Volumetric Runoff Coefficient (R) =	0.162	

WQV =	0.339	ac-ft
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WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) =	0.162	inches
CN =	84	Figure 2-1 (SWQM)

TIME OF CONCENTRATION (Tc), 10 minute minimum

Tc =	21.4	min
Tc =	0.36	hours
Initial Abstraction (I _a) =	0.381	Table 4-1 (SWQM)
I _a /P Calculation =	0.381	
Unit Peak Discharge (q _u) =	325	Exhibit 4-111 (SWQM)

WQF =	2.06	cfs
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Water Quality Volume (WQV) & Water Quality Flow (WQF)

PROJECT 073-0182 Rehab of Bridge No. 00608
 DATE 4/14/2015
 SUBJECT Water Quality Flow Calculation

PREPARED BY STEPHEN HALL
 CHECKED BY

SYSTEM 3 FINAL CONDITION

Drainage Area	Impervious Area (ac)	Total Area (ac)
S3 056+91 lt1	0.111	0.11
S3 056+91 rt1	0.121	0.12
S3 057+91 rt1	0.158	0.16
S3 059+15 rt1	0.168	1.14
S3 060+40 lt1	0.130	0.13
S3 060+40 lt2	0.180	0.18
S3 060+40 rt1	0.116	0.56
S3 061+12 rt1	0.365	0.37
S3 061+41 rt1	0.000	2.33
S3 062+80 lt1	0.364	0.36
S3 062+89 lt2	0.448	1.01
S3 062+97 rt1	0.062	0.65
S3 064+49 rt1	0.091	0.09
S3 064+49 rt2	0.384	0.42
S3 064+49 rt3	0.000	2.29
S3 510+87 lt1	0.050	0.05
S3 510+87 rt1	0.070	0.07

WATER QUALITY VOLUME (WQV) CALCULATION SYSTEM 3 P35-O/P41-O

Area (A) = 10.04 acres
 Area (A) = 0.01569 square miles
 Design Precipitation (P) = 1 inch
 % Impervious Cover (I) = 28.07
 Volumetric Runoff Coefficient (R) = 0.303

WQV = 0.253 ac-ft

WATER QUALITY FLOW (WQF) CALCULATION

RUNOFF CURVE NUMBER (CN)

Runoff Depth (Q) = 0.303 inches
 CN = 90 Figure 2-1 (SWQM)

TIME OF CONCENTRATION (T_c), 10 minute minimum

T_c = 20.1 min
 T_c = 0.34 hours

Initial Abstraction (I_a) = 0.222 Table 4-1 (SWQM)

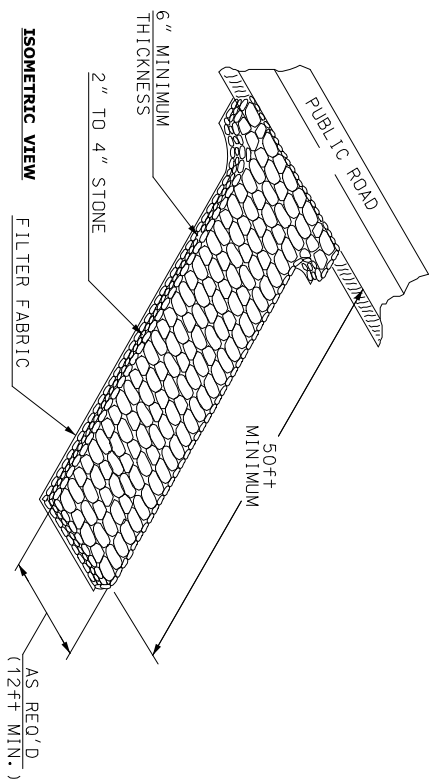
I_a/P Calculation = 0.222

Unit Peak Discharge (q_u) = 450 Exhibit 4-111 (SWQM)

WQF = 2.14 cfs

Appendix C – Plan Sheets

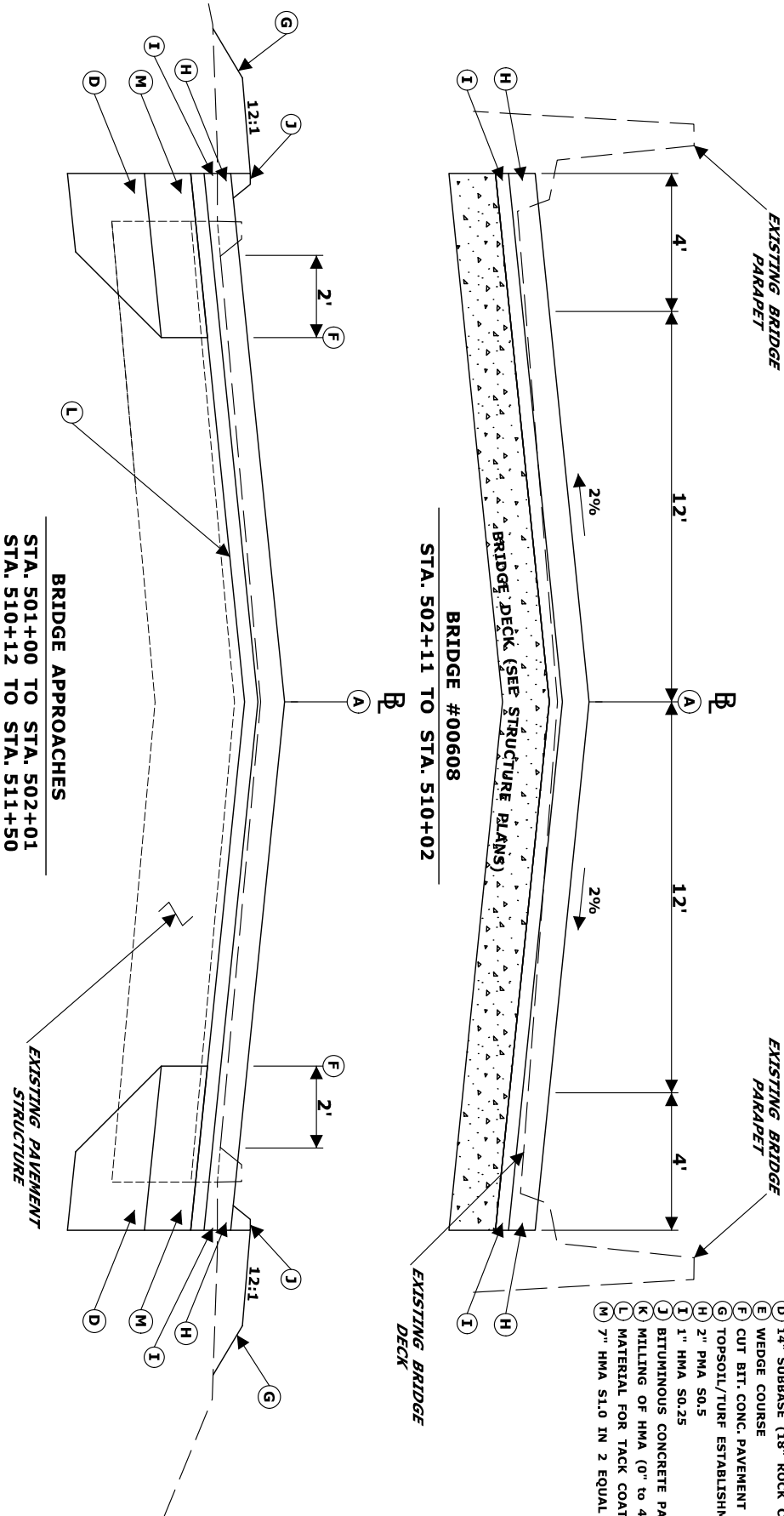
ANTI-TRACKING PAD

[illegible]



LEGEND

- (A) POINT OF APPLICATION OF GRADE (P.A.G.)
- B 2" HMA S0.5
- C 4" HMA S1.0
- D 14" SUBBASE (18" ROCK CUT)
- E WEDGE COURSE
- F CUT BIT. CONC. PAVEMENT
- G TOPSOIL/TURF ESTABLISHMENT/ECM TYPE B*
- H 2" PMA S0.5
- I 1" HMA S0.25
- J BITUMINOUS CONCRETE PARK CURBING
- K MILLING OF HMA (0" TO 4")
- L MATERIAL FOR TACK COAT
- M 7" HMA S1.0 IN 2 EQUAL LIFTS



*CLASS 1 ECM (EROSION CONTROL MATTING) TYPE B TO BE INSTALLED AS DIRECTED BY THE ENGINEER ON SLOPES STEEPER THAN 4H:1V AND IN SWALE

REVISIONS		THE INFORMATION, INCLUDING ESTIMATED QUANTITIES, IS BASED ON A PRELIMINARY SURVEY AND FIELD OBSERVATION. IT IS THE RESPONSIBILITY OF THE ENGINEER TO VERIFY THE ACCURACY OF THE INFORMATION AND TO MAKE ANY NECESSARY ADJUSTMENTS TO THE DESIGN.	
NO.	DATE	DESCRIPTION	SHEET NO.
1		ISSUED FOR CONSTRUCTION	3.05
DESIGNER/DATE		CHECKED BY: JA	
NOT TO SCALE		STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	
SIGNATURE		OFFICE OF ENGINEERING	
PROJECT TITLE		REHABILITATION OF BRIDGE NO. 00608 RT 8 NB OVER NAUGATUCK RIVER AND RR	
TOWN		LITCHFIELD HARWINTON	
DRAWING NO.		073-182	
SHEET NO.		TYP-02	
PROJECT NO.		3.05	

POST STAGE 2

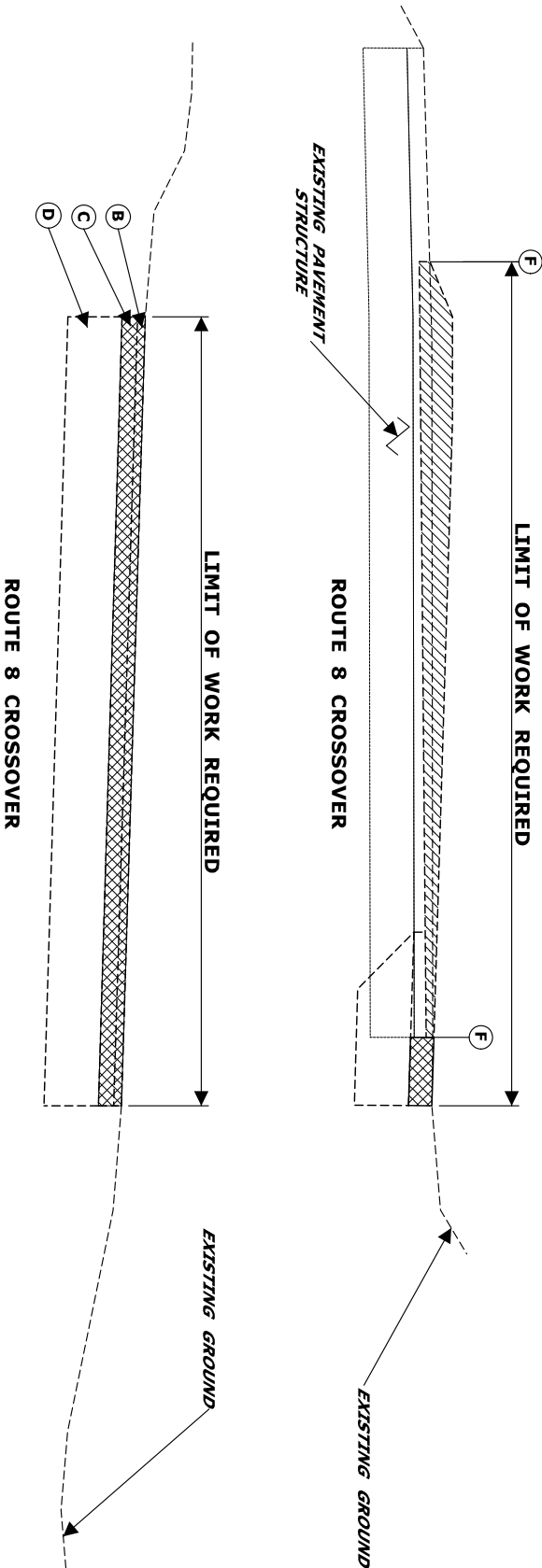
WORK TO BE PERFORMED ONCE TRAFFIC IS NO LONGER CONVEYED ON THE TEMPORARY CROSSOVER

LEGEND

- (A) POINT OF APPLICATION OF GRADE (P.A.G.)
- (B) 2" HMA S0.5
- (C) 4" HMA S1.0
- (D) 14" SUBBASE (18" ROCK CUT)
- (E) WEDGE COURSE
- (F) CUT BIT. CONC. PAVEMENT
- (G) TOPSOIL/TURF ESTABLISHMENT/ECM TYPE B*
- (H) 2" PMA S0.5
- (I) 1" HMA S0.25
- (J) BITUMINOUS CONCRETE PARK CURBING
- (K) MILLING OF HMA (0" TO 4")
- (L) MATERIAL FOR TACK COAT
- (M) 7" HMA S1.0 IN 2 EQUAL LIFTS

GENERAL NOTES

- ALL HMA OUTSIDE THE EXISTING ROUTE 8 EDGE OF ROAD IS TO BE EXCAVATED AND REPLACED WITH TOPSOIL AT A DEPTH OF 6". TOPSOIL WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR "FURNISHING AND PLACING TOPSOIL"
- EXISTING ROUTE 8 PAVEMENT STRUCTURE WILL REQUIRE MILLING AND RESURFACING IN ORDER TO RETURN STRUCTURE TO PRE-CONSTRUCTION CONDITION. ITEMS WILL BE PAID FOR UNDER THEIR RESPECTIVE UNIT PRICES
- 14" SUBBASE TO REMAIN IN PLACE



*CLASS 1 ECM (EROSION CONTROL MATTING) TYPE B TO BE INSTALLED AS DIRECTED BY THE ENGINEER, ON SLOPES STEEPER THAN 4H:1V AND IN SWALE

- MILLING AND RESURFACING
- EXCAVATE 6" HMA
- TURF ESTABLISHMENT
- FURNISH AND PLACE TOPSOIL

REVISIONS		THE INFORMATION, INCLUDING ESTIMATED QUANTITIES, IS BASED ON A FIELD AND IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.	
NO.	DATE	DESCRIPTION	SHEET NO.
1			1
2			2
3			3
4			4
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7			7
8			8
9			9
10			10
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100			100

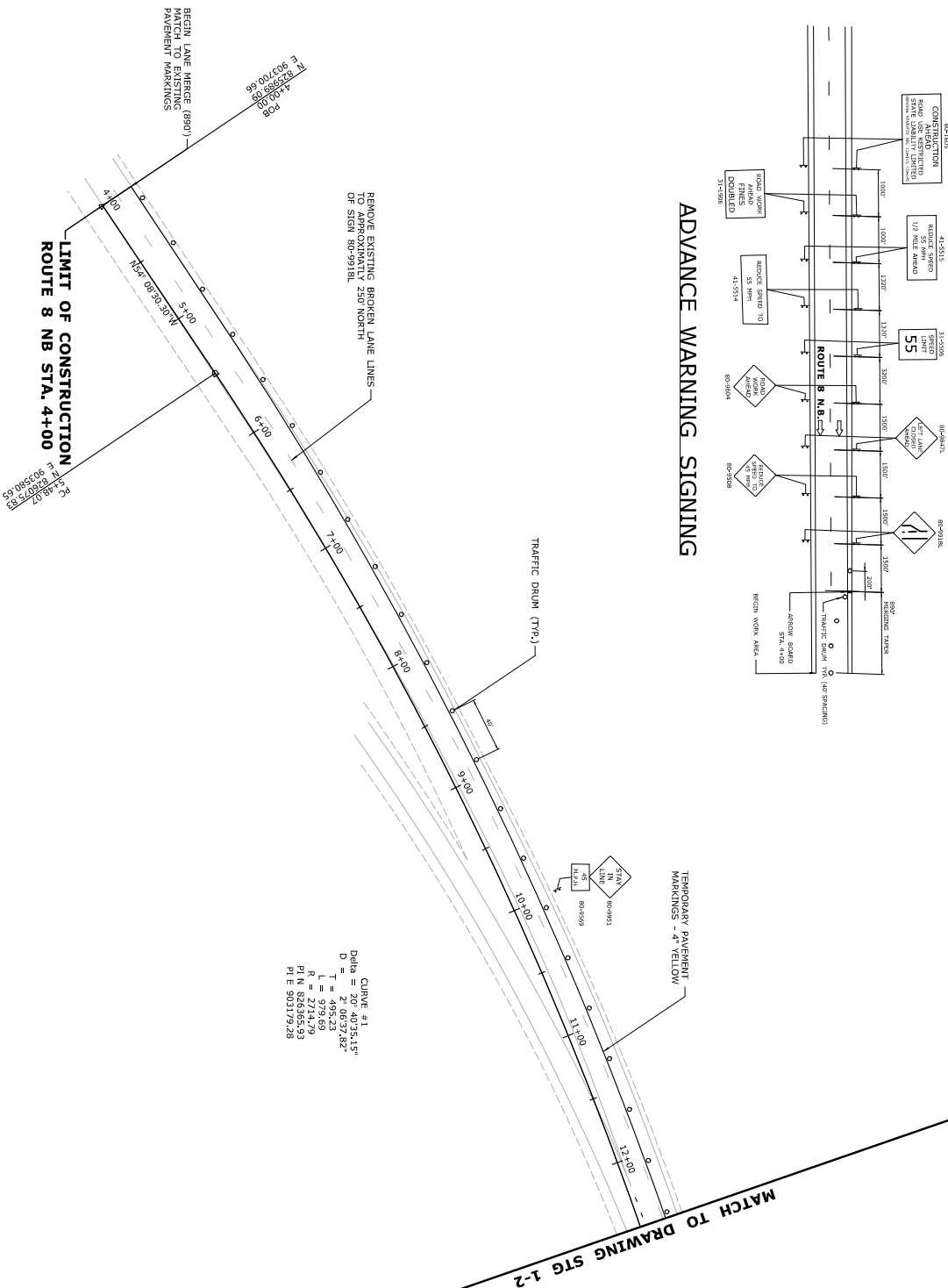


- STAGE 1**
SUGGESTED SEQUENCE OF WORK
- 1 - REMOVE EXISTING PAVEMENT MARKINGS AS CALLED OUT ON THE STAGE 1 PLANS
 - 2 - INSTALL ADVANCED WARNING SIGNS AND TRAFFIC DRUMS AND CONES AS SHOWN ON STAGE 1 PLANS
 - 3 - INSTALL PAVEMENT MARKINGS AS SHOWN ON THE STAGE 1 PLANS
 - 4 - PLACE TEMPORARY IMPACT ATTENUATION SYSTEMS AND CONES AS SHOWN ON THE STAGE 1 PLANS
 - 5 - CONSTRUCT CROSS-OVER ACCORDING TO THE PLANS

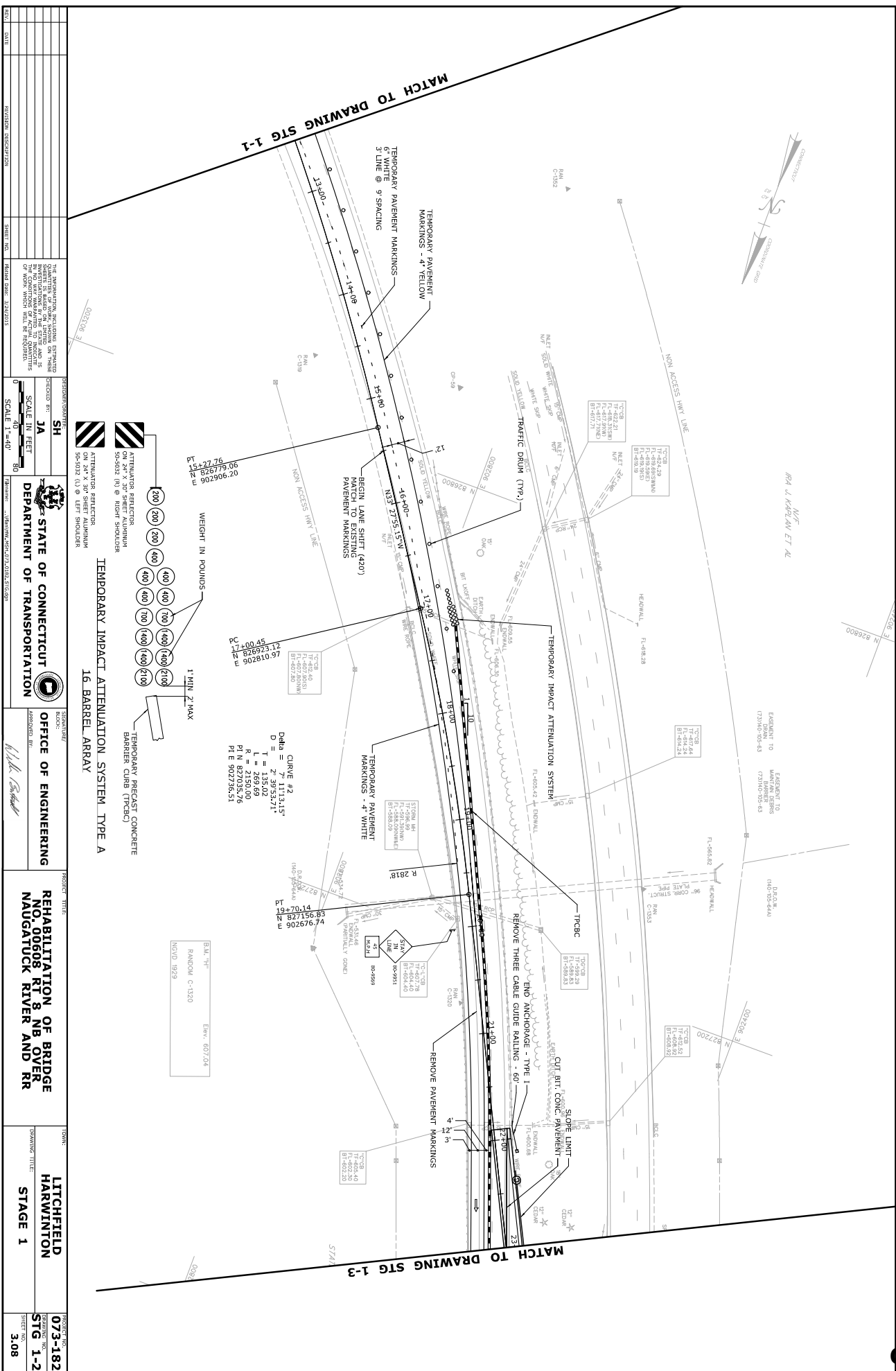
NOTES

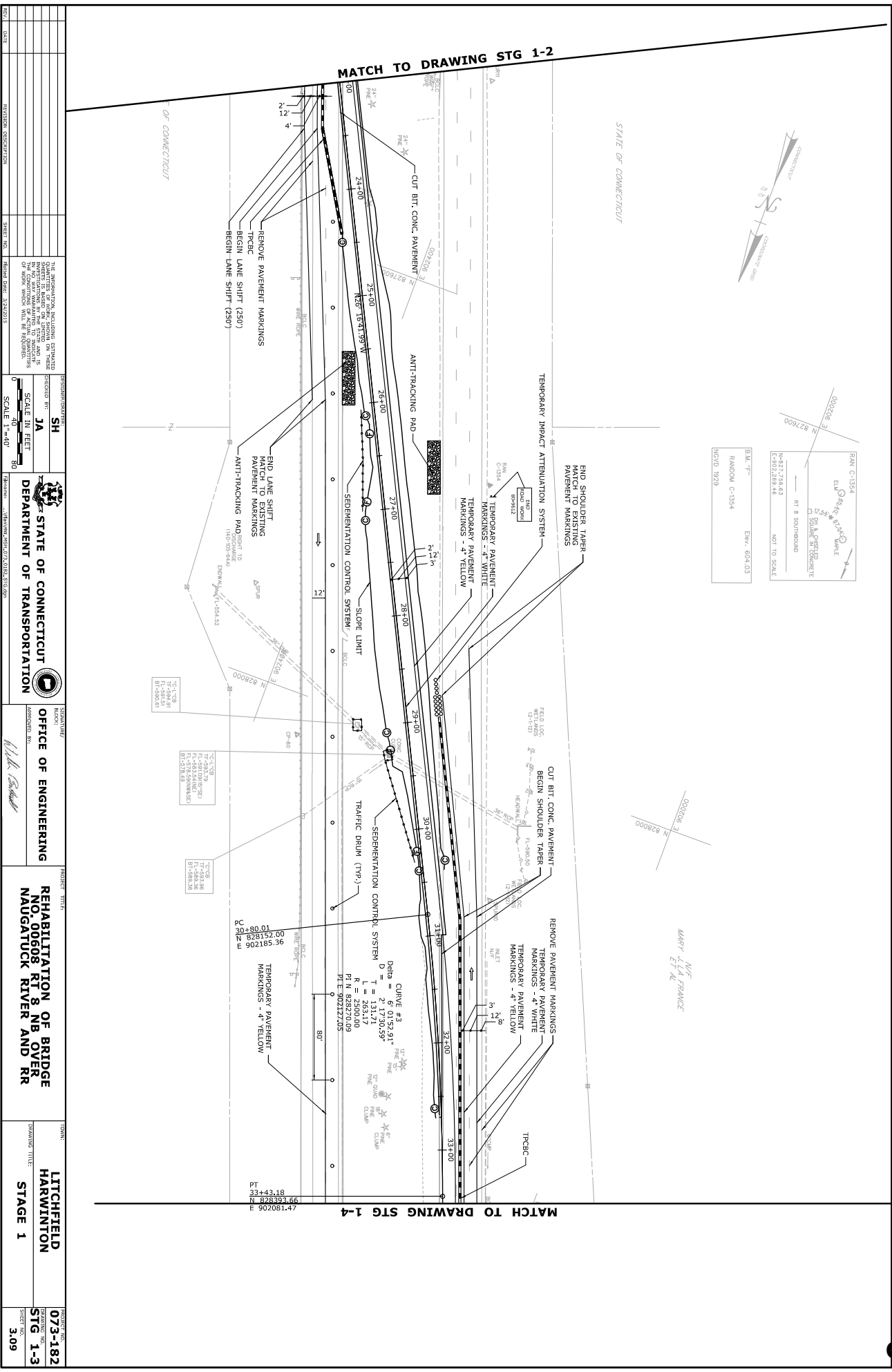
- 1 - ALL SIGN LOCATIONS SHALL BE FIELD ADJUSTED WITH RESPECT TO GEOMETRY BY THE DIRECTION OF THE ENGINEER.
- 2 - INSTALL BARRICADE WARNING LIGHTS (HIGH INTENSITY) AS SHOWN ON THE STAGE 1 PLANS.
- 3 - THE LOCATIONS OF TEMPORARY SIGNS SHOWN ON THE PLANS ARE APPROXIMATE AND SHALL BE ADJUSTED TO MEET FIELD CONDITIONS.
- 4 - TEMPORARY SIGNS SHALL BE MOUNTED ON POSTS WHEN FEASIBLE. ALL POST-MOUNTED CONSTRUCTION SIGNS ARE TO BE REMOVED IMMEDIATELY AFTER CONSTRUCTION IS COMPLETE.
- 5 - COVER OR TEMPORARILY REMOVE ALL CONFLICTING SIGNS, SHOW EXISTING CONFLICTING PAVEMENT MARKINGS, TEMPORARY PAVEMENT MARKINGS LASTING THROUGH THE WINTER SHALL BE EPOXY.
- 6 - THE CONTRACTOR WILL SURVEY ALL AREAS EFFECTED BY THE PROPOSED CONSTRUCTION BEFORE THE INTENT IS TO RESTORE THE AREAS TO THEIR ORIGINAL CONDITION WHEN THE PROJECT IS COMPLETE.
- 7 - THE LOCATIONS OF THE TRAFFIC DRUMS SHOWN ON THE PLANS ARE APPROXIMATE AND SHALL BE ADJUSTED BY THE ENGINEER.
- 8 - ADDITIONAL CONSTRUCTION SIGNS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
- 9 - ADVANCE WARNING SIGNS FOR STAGE 1 FOR USE DURING CONSTRUCTION SHALL BE INSTALLED WITH THE FOLLOWING LIMITS: 10-55 MPH SPEED LIMIT SIGNING SHALL BE INSTALLED WITH ADVANCE WARNING SIGNS FOR STAGE 1 FOR USE DURING CONSTRUCTION SHALL BE USED PRIOR TO OR AFTER STAGE CONSTRUCTION, WHEN STAGE CONSTRUCTION IS COMPLETE, THE POSTED SPEED LIMIT SHALL REVERT BACK TO 65 MPH.

ADVANCE WARNING SIGNING



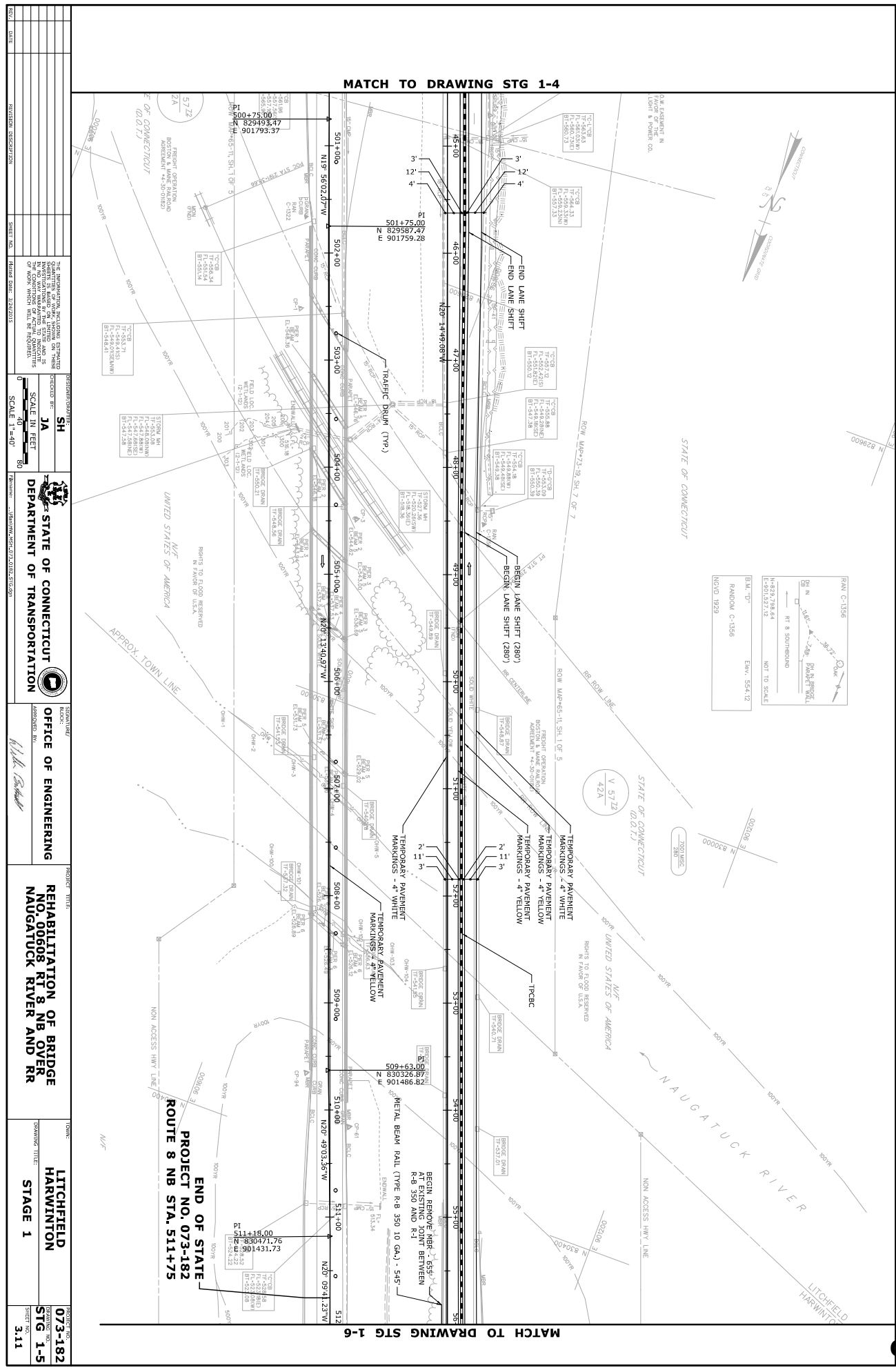
REVISIONS		THE INFORMATION, INCLUDING ESTIMATED QUANTITIES, IS BASED ON THE INFORMATION PROVIDED BY THE CLIENT AND IS NOT TO BE USED FOR ANY OTHER PURPOSE. NO WARRANTY IS MADE BY THE ENGINEER FOR THE ACCURACY OF THE INFORMATION OR THE RESULTS OF THE DESIGN. THE CLIENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR THE PROTECTION OF THE WORK WHICH WILL BE PERFORMED.	
NO.	DATE	DESCRIPTION	SHEET NO.
1	10/1/2011	ISSUED FOR CONSTRUCTION	1
DRAWING TITLE		PROJECT TITLE	TOWN
LITCHFIELD HARTWINTON STG 1-1		REHABILITATION OF BRIDGE NO. 00608 RT 8 NB OVER NAUGATUCK RIVER AND RR	LITCHFIELD HARTWINTON
PROJECT NO.		073-182	
DRAWING NO.		STG 1-1	
SHEET NO.		3.07	



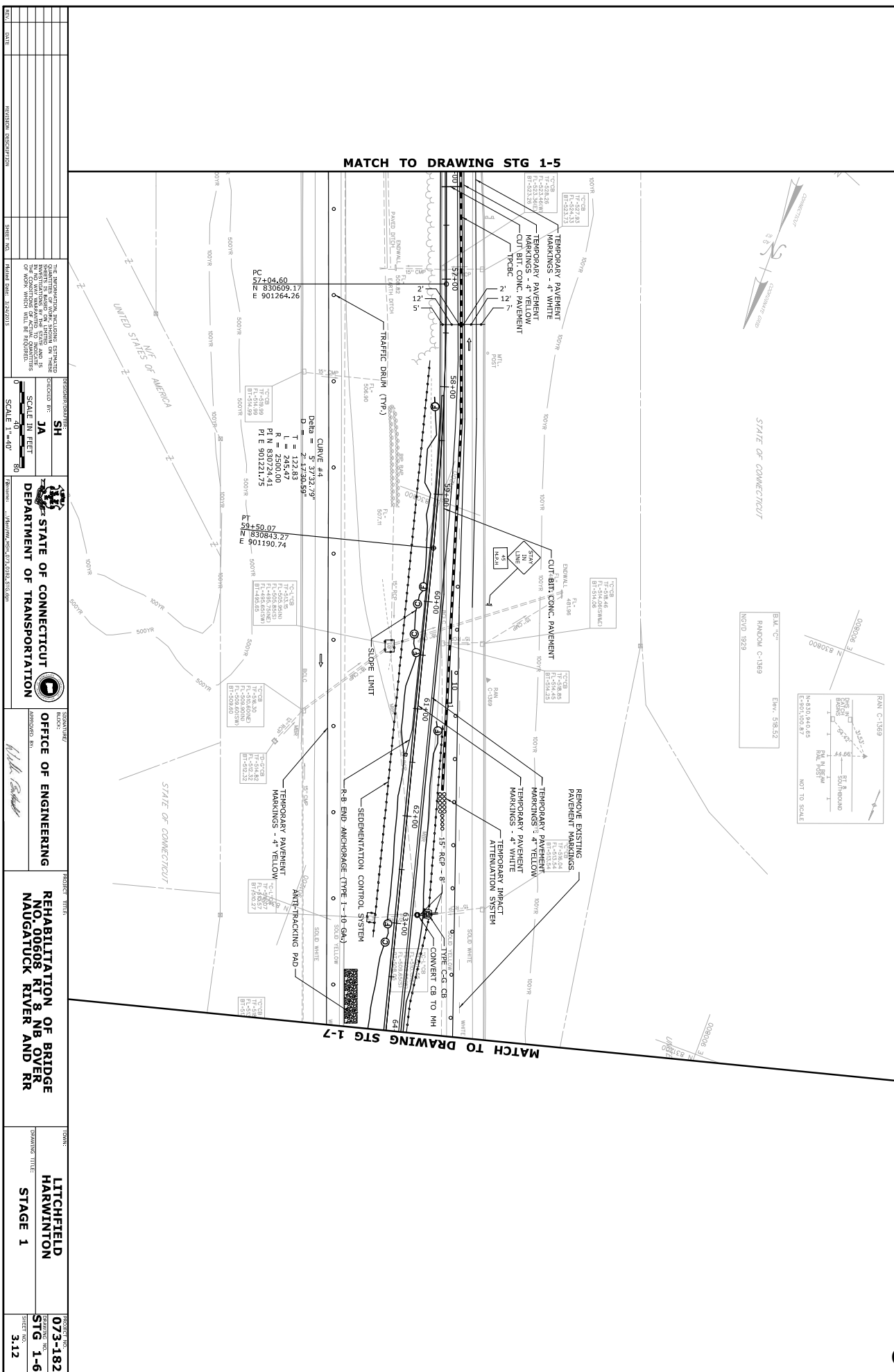


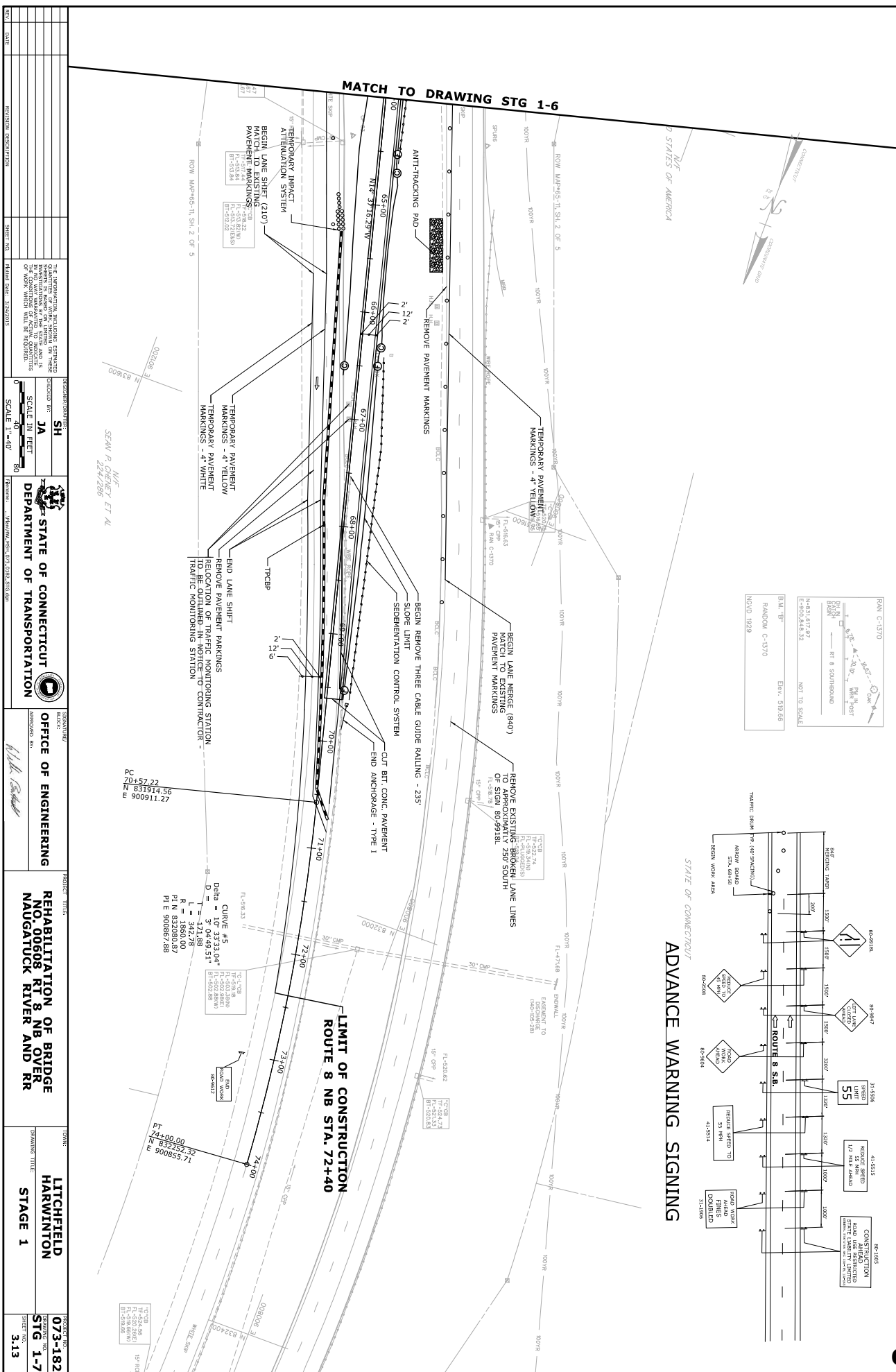
PROJECT NO. 073-182	
DRAWING NO. STG 1-3	
SHEET NO. 3.09	
PROJECT TITLE: LITCHFIELD HARWINTON	
DRAWING TITLE: STAGE 1	
PROJECT TITLE: REHABILITATION OF BRIDGE NO. 00608 RT 8 NB OVER NAUGATUCK RIVER AND RR	
OFFICE OF ENGINEERING	
STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	
SCALE: 1"=40'	
SHEET NO. 3.09	
DATE: 12/20/2011	
REVISIONS:	
1. THE INFORMATION, INCLUDING ESTIMATED QUANTITIES, IS BASED ON THE INFORMATION PROVIDED BY THE CLIENT AND IS NOT TO BE USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.	
2. THE INFORMATION IS NOT TO BE USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.	





PROJECT NO. 073-182		PROJECT TITLE: REHABILITATION OF BRIDGE NO. 00608 RT 8 NB OVER NAUGATUCK RIVER AND RR	
STG 1-5		DRAWING TITLE: STAGE 1	
3.11		LITCHFIELD HARWINTON	
DATE: 07/20/2011		DESIGNED BY: M. A. S. / S. A. S.	
DRAWN BY: M. A. S. / S. A. S.		CHECKED BY: J. A.	
SCALE: 1" = 40'		THE INFORMATION, INCLUDING ESTIMATED QUANTITIES, IS BASED ON THE INFORMATION PROVIDED BY THE CLIENT AND IS NOT TO BE USED FOR ANY OTHER PURPOSE.	
PROJECT NO. 073-182		PROJECT TITLE: REHABILITATION OF BRIDGE NO. 00608 RT 8 NB OVER NAUGATUCK RIVER AND RR	
STG 1-5		DRAWING TITLE: STAGE 1	
3.11		LITCHFIELD HARWINTON	

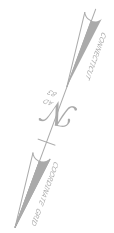




- 1 - RELOCATE TEMPORARY CONCRETE BARRIER CURB AND STRIPING TO EXISTING TEMPORARY ATTENUATION SYSTEM AS SHOWN ON THE ATTACHED PLANS.
- 2 - REMOVE EXISTING CROSS-OVER AREA TO PRE-CONSTRUCTION CONDITION, MILLING AND RESURFACING WILL BE REQUIRED ON ROUTE 8 TO RESTORE TO PRE-CONSTRUCTION CONDITIONS; THOSE ITEMS WILL BE PAID FOR UNDER THEIR RESPECTIVE CONTRACT UNIT PRICES.
- 3 - REMOVE EXISTING TEMPORARY ATTENUATION ON PHA-2 AND PHA-3 TO EXISTING TEMPORARY CONCRETE BARRIER CURB AND STRIPING.
- 4 - TEMPORARY IMPACT ATTENUATION SYSTEMS, MILLING AND RESURFACING WITH STRIPING AS IT WAS PRIOR TO THE BEGINNING OF THE PROJECT.

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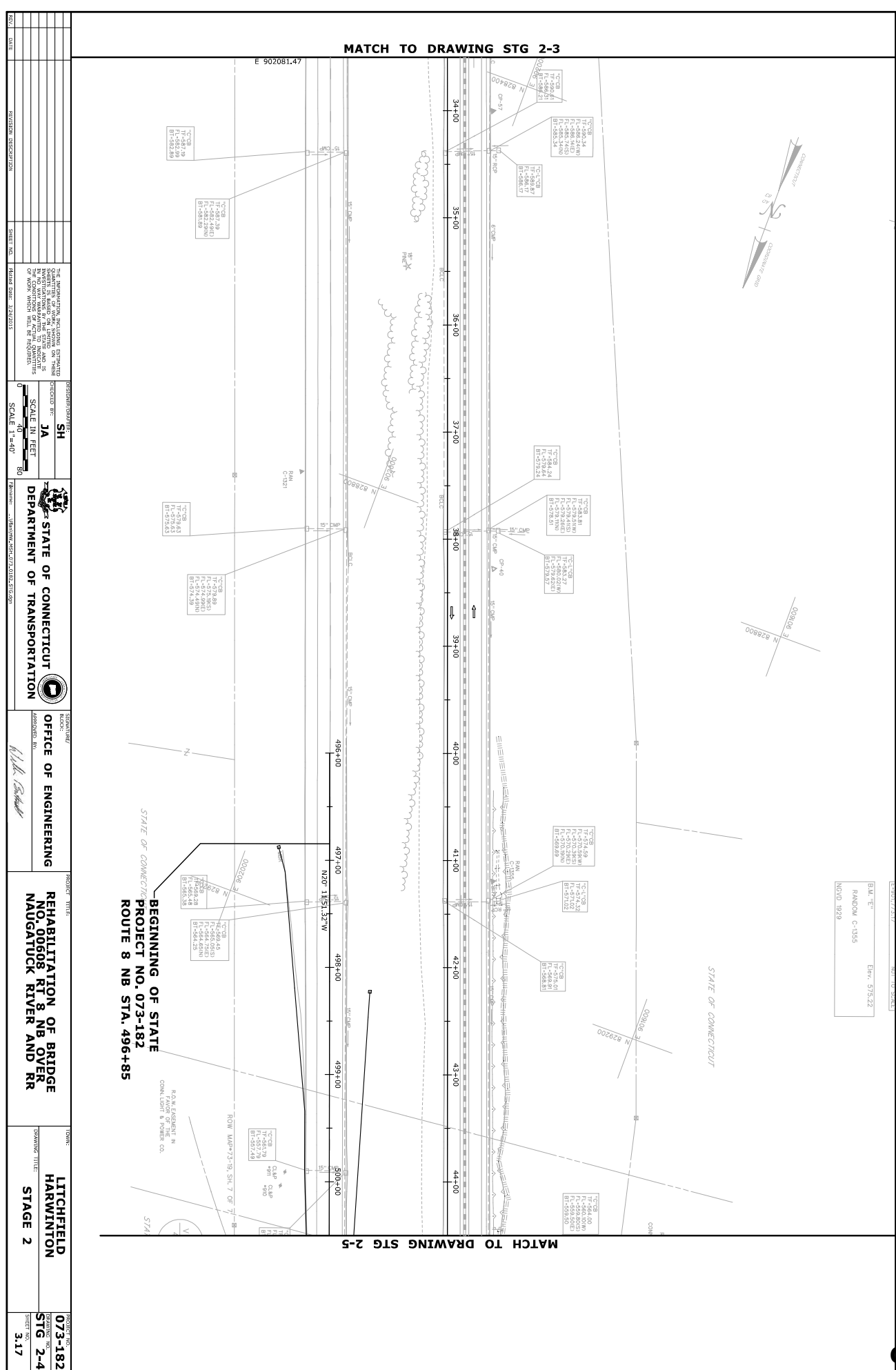
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RANDOM C-155
NOV 1929
Elev. 575.22



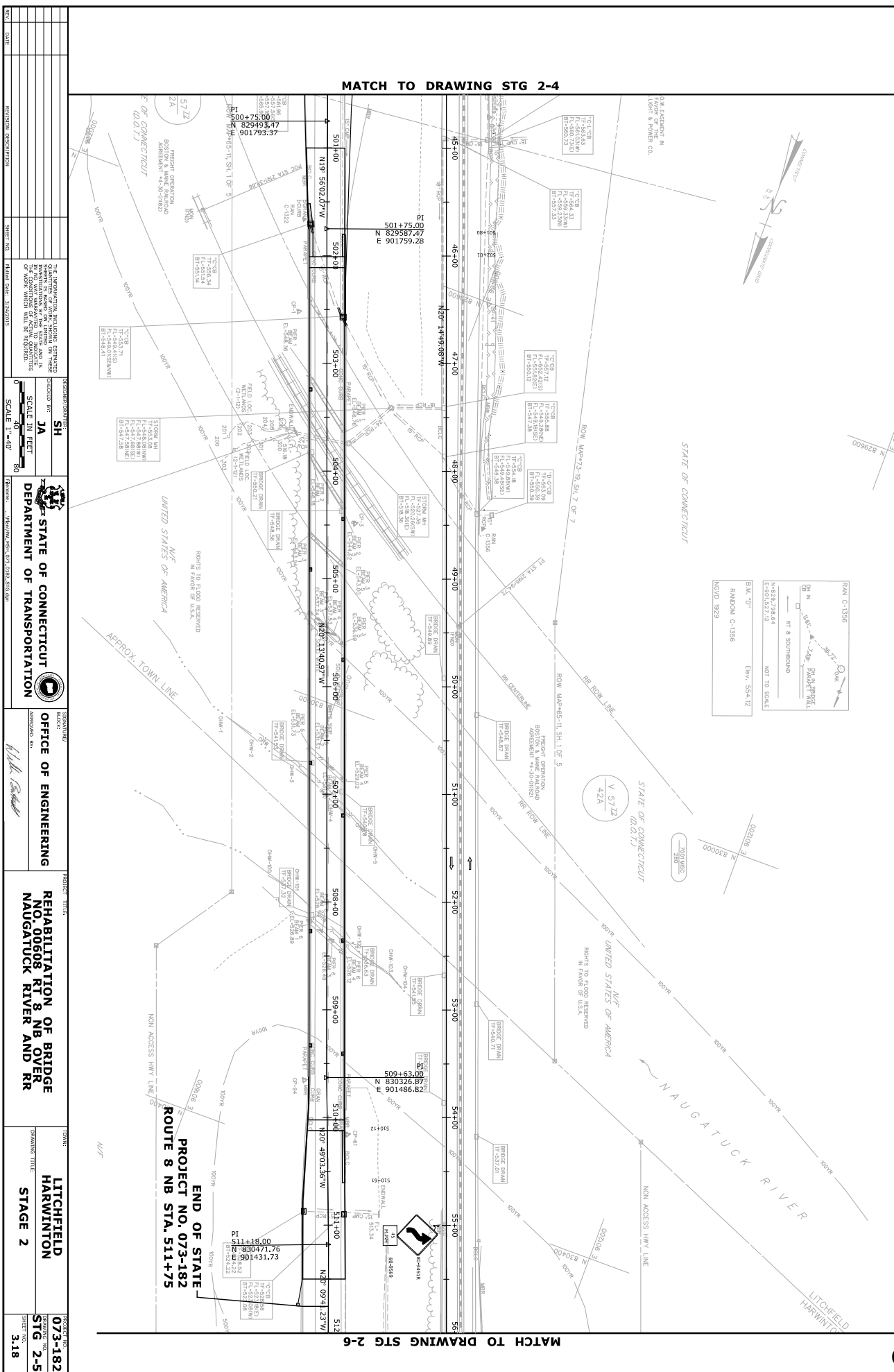
STATE OF CONNECTICUT

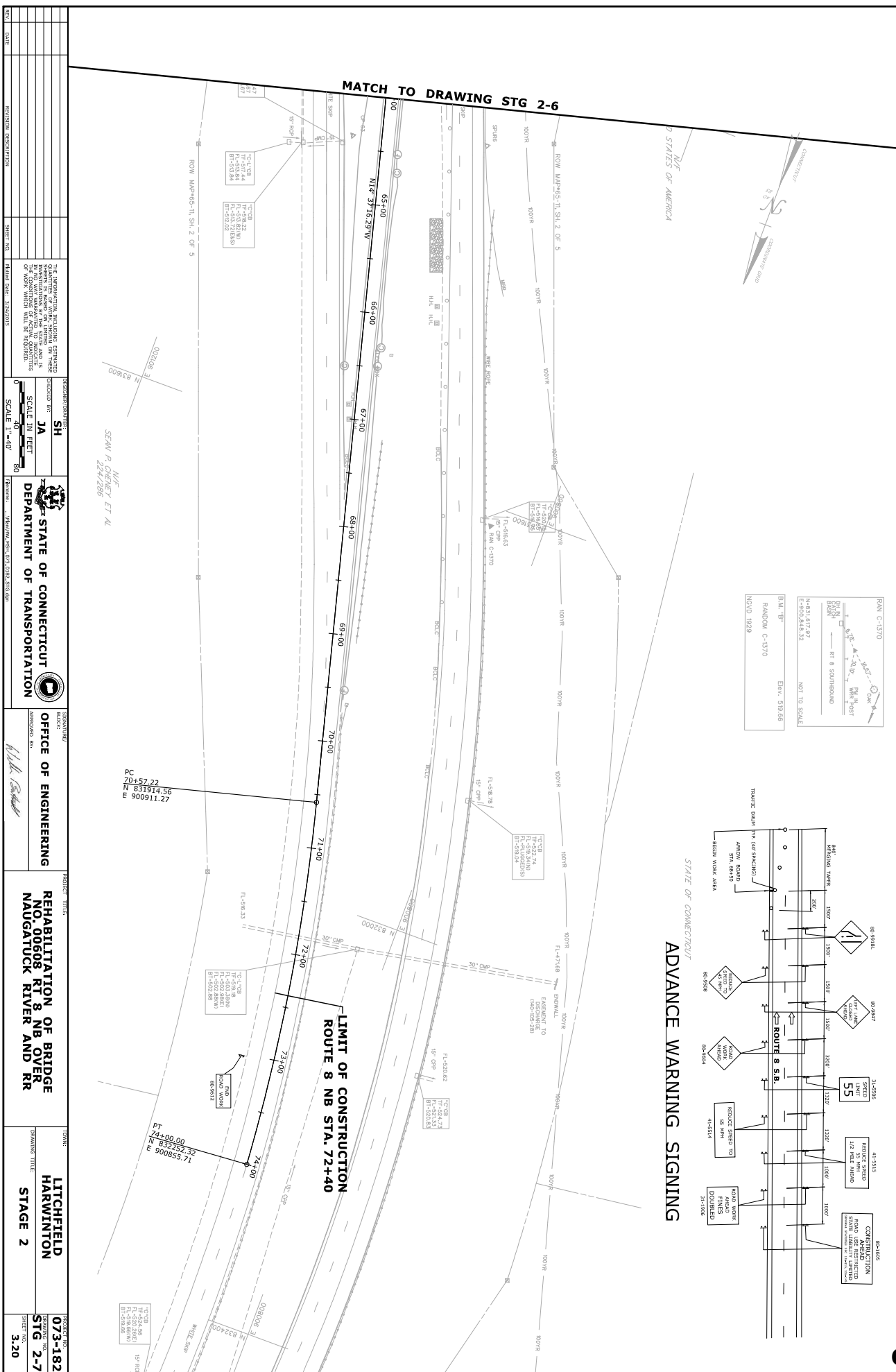
MATCH TO DRAWING STG 2-3

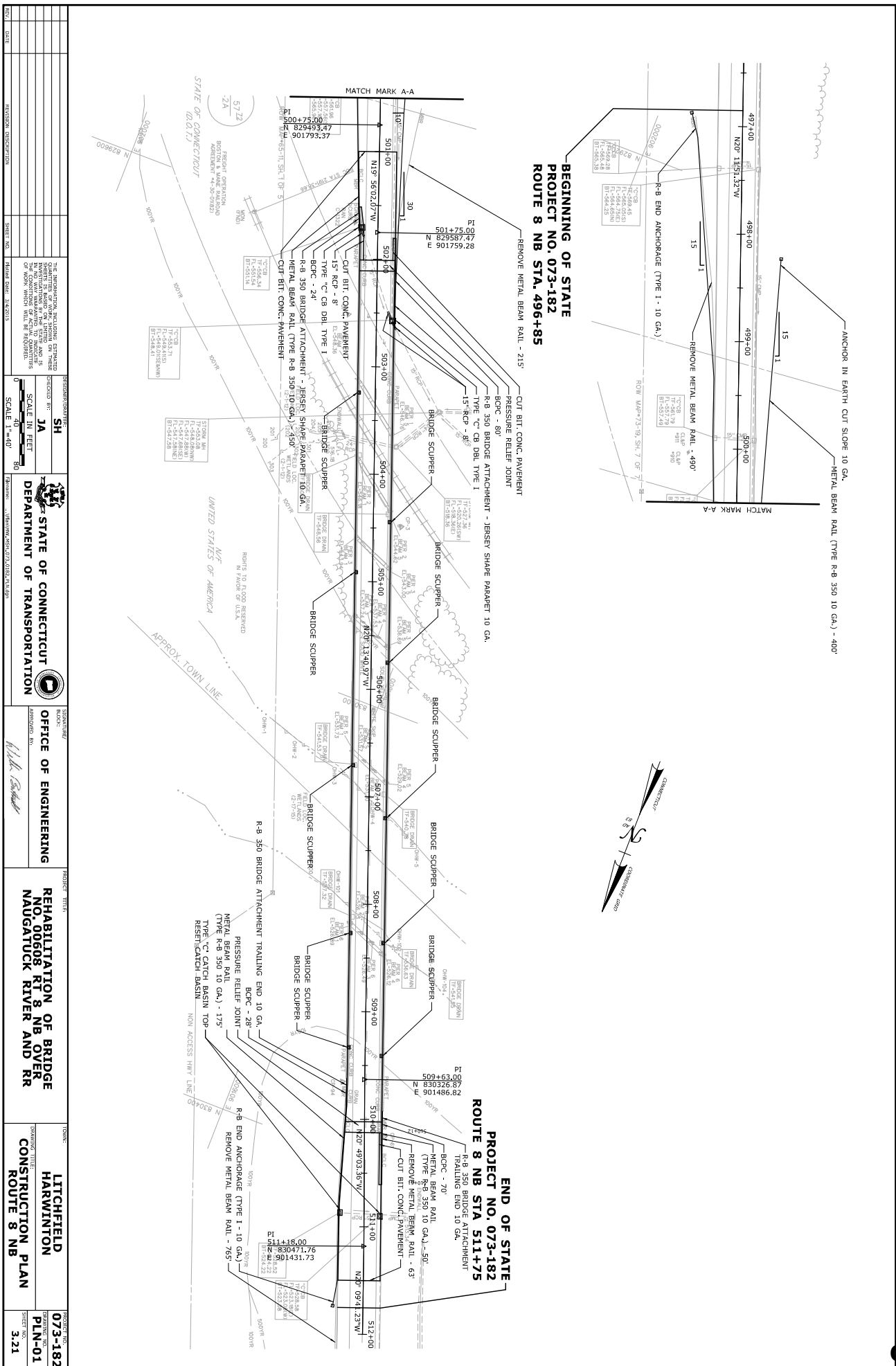
MATCH TO DRAWING STG 2-5

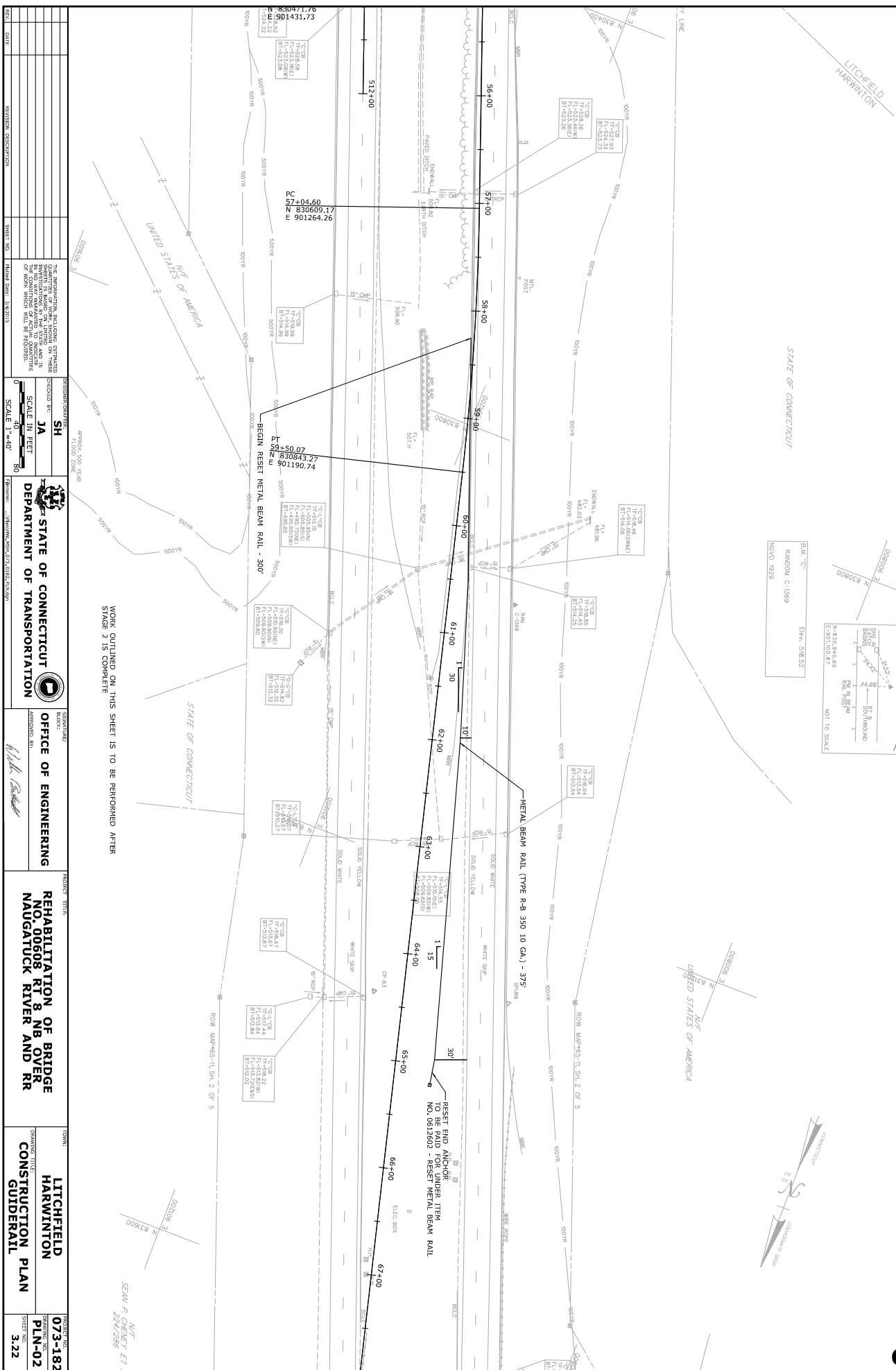


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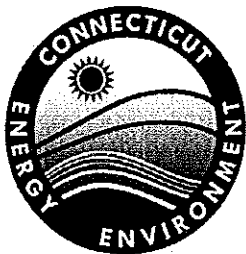








Appendix D – Stormwater Monitoring Report Form



Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from
Construction Activities, issued 8/21/13, effective 10/1/13
Stormwater Monitoring Report

SITE INFORMATION

Permittee:			
Mailing Address:			
Business Phone:	ext.:	Fax:	
Contact Person:	Title:		
Site Name:			
Site Address:			
Receiving Water (name, basin):			
Stormwater Permit No.	GSN		

SAMPLING INFORMATION (Submit a separate form for each outfall)

Outfall Designation:	Date/Time Collected:
Outfall Location(s) (lat/lon or map link):	
Person Collecting Sample:	
Storm Magnitude (inches):	Storm Duration (hours):
Size of Disturbed Area at any time:	

MONITORING RESULTS

Sample #	Parameter	Method	Results (units)	Laboratory (if applicable)
1	Turbidity			
2	Turbidity			
3	Turbidity			
4	Turbidity			

(provide an attachment if more than 4 samples were taken for this outfall)

Avg =

STATEMENT OF ACKNOWLEDGMENT

I certify that the data reported on this document were prepared under my direction or supervision in accordance with the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. The information submitted is, to the best of my knowledge and belief, true, accurate and complete.

Authorized Official:			
Signature:	Date:		

Please send completed form to:

DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE ASSURANCE
79 ELM STREET
HARTFORD, CT 06106-5127
ATTN: NEAL WILLIAMS

Appendix E – Notice of Termination Form



General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Notice of Termination Form

Please complete and submit this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your termination. Print or type unless otherwise noted.

Note: Ensure that for commercial and industrial facilities, registrations under the *General Permit for the Discharge of Stormwater Associated with Industrial Activity* (DEP-PED-GP-014) or the *General Permit for the Discharge of Stormwater from Commercial Activities* (DEP-PED-GP-004) have been filed where applicable. For questions about the applicability of these general permits, please call the Department at 860-424-3018.

Part I: Registrant Information

1. Permit number: **GSN**
2. Fill in the name of the registrant(s) as indicated on the registration certificate:
Registrant:
3. Site Address:
City/Town: _____ State: _____ Zip Code: _____
4. Date all storm drainage structures were cleaned of construction sediment:
Date of Completion of Construction: _____
Date of Last Inspection (must be at least three months after final stabilization pursuant to Section 6(b)(6)(D) of the general permit): _____
5. Check the post-construction activities at the site (check all that apply):
☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill
☐ Other (describe): _____

Part II: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Signature of Permittee _____

Date _____

Name of Permittee (print or type) _____

Title (if applicable) _____

Note: Please submit this Notice of Termination Form to:

STORMWATER PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127